U.S. Bureau of biological Survey

WILDLIFE REVIEW

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UNITED STATES DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

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WILDLIFE REVIEW

AN ABSTRACTING SERVICE FOR WILDLIFE MANAGEMENT
ISSUED FOR THE INFORMATION OF COOPERATORS
BY THE FISH AND WILDLIFE SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

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Except as indicated, abstracts are by William H. Stickel, editor.

WILDLIFE—BIBLIOGRAPHY, BIOGRAPHY, HISTORY

Anonymous. PUBLICATIONS BY THE STAFF, WILDLIFE RESEARCH LABORATORY, DENVER, COLORADO, 1941-1950. U. S. Fish and Wildlife Service, Denver. 1-13 p. 1951?
A classified bibliography, with author index. A brief history of the laboratory is included.

Darrah, William Culp. POWELL OF THE COLORADO. Princeton University Press. ix + 426 p., illus. 1951. $6.00. [From review by E. D. McKee in Scientific Monthly 73(5).]
Life and works of the man who explored the Grand Canyon and founded the U. S. Geological Survey and the American Bureau of Ethnology.

Gehr, Agnes R. JARED POTTER KIRTLAND. The Explorer [Cleveland Mus. Nat. Hist.] 2(7): 1-33. 1952. [From Auk 69(3).]
"An interesting biography of Dr. Kirtland, whose range of interests almost rivaled that of Dr. Franklin."

Hays, Alice N., compiler. JORDAN, DAVID STARR: A BIBLIOGRAPHY OF HIS WRITINGS 1871-1931. Stanford Univ. Publ., Univ. Ser., Library Stud., 1. xv + 195 p. 1952. $4.00. [From Copeia 1952(1).]
"Jordan published at least 645 scientific contributions in ichthyology, but he also wrote some 1,372 books and papers in other fields. This bibliography is therefore not only of great interest and value to ichthyologists and fishery biologists but to scholars in several fields."

Hobson, Richmond P. GRASS BEYOND THE MOUNTAINS. J. B. Lippincott Co., N. Y. 256 p. 1951. $3.75. [From review by J. C. Dykes in Journal of Range Management 5(3).]
The true story of the establishment of a 4 million acre ranch in Northern British Columbia—the last great cattle range on this continent—in the 1930's. "This is a book of adventure with moose, grizzlies, and timber wolves... Without even pretending to write about range management, the author sets forth essential principles for the conservation and utilization of the vast new country...It is the best personal narrative in a dozen years and the best bit of Western Americana in a long, long time."

McCoy, Joseph G. HISTORIC SKETCHES OF THE CATTLE TRADE OF THE WEST AND SOUTHWEST. Long's College Book Company, Columbus, Ohio. 427 p., illus. 1951. $8.50. [From review by A. P. Atkins in Journal of Range Management 5(3).]
Reissue of a book first published in 1874. The author tells from bitter first hand experience about the spread of the cattle business in the period following the Civil War, and about the difficulties involved. In many ways the author was ahead of his times, and modern range specialists find little to criticize in his views.

McDermott, John Francis, editor. UP THE MISSOURI WITH AUDUBON: THE JOURNAL OF EDWARD HARRIS. University of Oklahoma Press. 222 p., illus. $3.75. [From review by D. Amadon in Natural History 61(4).]
Account of J. J. Audubon's last voyage of exploration to the upper Missouri. "In his journal, Harris recorded the daily experiences of the party with the savage animals and Indians and nearly as savage white adventurers and hunters who roamed the western plains in those days. Buffalo hunting was at its height, and this journal is noteworthy for its authentic descriptions of this important chapter in frontier life...This is a fine book in every respect: well produced, finely illustrated, and edited by an authority on the history of the region and period."

Michigan Game Division. LIST OF AVAILABLE PUBLICATIONS. Game Division, Michigan Department of Conservation, Lansing 13, Mich. 1-7 p. July 1952.
Arrangement is by subject. For each entry there is given author's last name, date, and title. Pagination and place of publication are not indicated.

WILDLIFE--BIBLIOGRAPHY, BIOGRAPHY, HISTORY--Continued

Rodgers, Andrew Denny, III. BERNARD EDUARD FERNOW. Princeton University Press. xx + 623. 1951. $7.50. [From review by Norman Taylor in Scientific Monthly 73(6).]

The story of the man who brought forestry to the U. S. The book "...is enormously diffuse, extraordinarily well documented, thoroughly indexed, and perhaps the best record of the history of forestry at the turn of the century that has been written."

Whitford, Philip and Kathryn. THOREAU: PIONEER ECOLOGIST AND CONSERVATIONIST. Scientific Monthly 73(5): 291-296. Nov. 1951.

WILDLIFE--EDUCATION

Donant. Win. OUR WILDLIFE AND ITS WISE USE. North Carolina Wildlife Resources Commission, N. C. Resource Bulletin Series. 1-80 p., illus. No date (1949).

This bulletin was prepared to provide teachers and other youth leaders with simple, basic information on wildlife conservation. It properly emphasizes the importance of the environment and the interrelationship of natural resources. Many factors in the conservation and management of mammals, birds, and fishes are discussed. Natural history of the major groups is reviewed, and general accounts are given of most mammals native to the state. Numerous educational activities are outlined.

Leopold, A. Starker. GAME BIRDS AND MAMMALS OF CALIFORNIA, A LABORATORY SYLLABUS. California Book Co., Berkeley. 125 p., illus. 1951. $3.00. [From review by O. H. Hewitt in Journal of Wildlife Management 16(2).]

"The scope...is America-wide, focussing on California. It includes many economically important predators and rodents and omits certain game species no longer important, such as the shorebirds...it will serve as a notebook as well as laboratory guide...Each species is treated according to range, habitat and 'remarks.' Remarks...cover habits generally."

Russell, Whittaker J. and Edward A. Ackerman. AMERICAN RESOURCES, THEIR MANAGEMENT AND CONSERVATION. Harcourt, Brace and Co., N. Y. xi + 497, illus. 1951. $6.75. [From review by F. C. Edminster in Journal of Wildlife Management 16(2).]

"This is a first-rate college-level textbook on natural resources...An introduction considers the world conservation problems, the nature of resource deterioration, the relation of resources to human populations, and the United States Situation. Then follow five 'Parts' covering, in order: Cultivable Land, Grasslands and Forest Lands, Water Resources, Minerals and Their Uses, and Recreational Resources and Fish and Wildlife. A final section, 'Conclusion', is sub-titled, 'An American Citizen's Guide to Conservational Resource Management.' " Wildlife is mentioned throughout and also receives several pages of special consideration. Edminster's review provides a more thorough appraisal of the book.

WILDLIFE--TECHNIQUES

Ashbrook, Frank G. RAISING SMALL ANIMALS FOR PLEASURE AND PROFIT. Van Nostrand, N. Y. viii + 260 p., illus. 1951. $4.00.

This practical volume gives a great deal of solid information, simply presented, on the housing, care, feeding, and medication of small mammals, goats, poultry, game birds, fur animals, pond fish, trout, frogs, and bait animals. There are also instructions for butchering, storing, marketing, and cooking many kinds of animals. Sources of additional information are listed. Anyone wishing to grow rabbits, guinea pigs, squabs, crickets or other commonly used animals should find this book helpful.

WILDLIFE--TECHNIQUES--Continued

Greenberg, Sylvia S. and Edith L. Raskin. HOME-MADE ZOO. David McKay Co., N. Y. 256 p. 1952. $3.00. [From Nature Magazine 45(6).]
"This is a practical guide to the care of small pets, and is the result of the experiences of two teachers in caring for such pets in schoolrooms and in the home. It should be of great value to teachers, parents, youth leaders, and young pet owners. Following the advice in this book will make life much more endurable for small captives."

Lindenmuth, A. W., Jr. A BETTER MEASURING TAPE FOR MANY WOODS USES. U. S. Forest Service, Southeastern Forest Experiment Station (Asheville), Research Notes no. 9. 1 p. April 1952.
Most field biologists have been bothered by the cost, kinking, and fragility of steel tapes. The author reports that plastic clothesline is equally good and in some ways superior. "The results indicate that in measuring the radius of a one-fifth or one-quarter acre plot, for example, the difference in length between a steel tape and a plastic line should be less than 0.2 inch even though the pull varies from 10 to 25 pounds. Temperature extremes apparently have no more effect on the length of the plastic line than on a steel tape...Fixed distances can easily be marked with wire wrappings, metal bands, or by painted enamel stripes...The light weight and flexibility of the plastic makes the job of stretching a straight line in the woods much easier. The white color of the plastic can be seen more readily and for longer distances. And the plastic can easily be kept clean by merely wiping off dirt with a damp cloth. The plastic is not damaged by water, oil, gasoline, or other common liquids. It can be rolled up when wet and stored without damage." It is not flammable.

Low, Julian W. PLANE TABLE MAPPING. Harper & Bros. xvii + 365 p., illus. 1952. $5.00. [From review by K. F. Mather in American Scientist 40(3).]
Field manual and textbook. "The book is excellently planned and ably executed for either of these purposes. It describes in detail the various methods whereby the telescopic alidade and plane table may be used in surveys, covering in practical fashion the numerous techniques developed over the years by those who have been most skillful with such instruments." Includes 148 figures.

Rollin, Noble. A CENTRAL ELECTRO-PHOTOGRAPHIC RECORDER AND COMPARATOR. Dawn Song and All Day 1(5): 45-47. 1951. [From Auk 69(2).]
"Brief description of use of a 'robot bird watcher' which works on basis of translating activities into light which is recorded on micro-film. The machine has immense possibilities."

Schultz, Vincent. AN APPLICATION OF AERIAL PHOTOGRAPHY TO LAND-USE AND COVER MAPPING. Journal of Wildlife Management 16(2): 227-228. April 1952.
Advantages and usefulness of the Ozalid process in reproducing maps and other records. Additional data can be added easily by use of a superimposed transparent sheet.

U. S. Bureau of the Census. STATISTICAL ABSTRACT OF THE UNITED STATES: 1951. (72nd edition.) Government Printing Office, Washington 25, D. C. xvi + 1047, illus. 1951. $3.00 (buckram).
Contains an amazing variety of source material on hundreds of subjects. Of particular interest to biologists may be the sections on climate; public lands; the national park system; irrigation, drainage, and soil conservation; agriculture - general statistics, production, and related subjects; forest and forest products; fisheries. Data are presented in tables, graphs, and charts, and are usually broken down by regions and states. Sources where more detailed information on a given subject may be obtained are indicated consistently.

WILDLIFE--BIOMETRICS [Dr. Vincent Schultz has kindly gone through all issues of Biometrics and its predecessor, Biometrics Bulletin, and copied out references to all papers of special value to wildlife or fisheries biologists. Entries in this section are, with the exception of two references from Biometrika, those supplied by Dr. Schultz.]

Bailey, Norman T. J. ON ESTIMATING THE SIZE OF MOBILE POPULATIONS FROM RECAPTURE DATA. Biometrika 38(3/4): 293-306. 1951. [From review by C. H. Blake in Bird-Banding 23(2).]
"This is a discussion of sampling methods which permit maximum likelihood estimates of the precision of the 'Lincoln index.'"

Chapman, D. G. INVERSE AND MULTIPLE ZOOLOGICAL SAMPLE CENSUSES. Abstract in Biometrics 7(3): 300. Sept. 1951.

Cole, La Mont C. THE NON-RANDOM DISTRIBUTION OF ANIMAL POPULATIONS--AN URGENT PROBLEM FOR FURTHER INVESTIGATION. Abstract in Biometrics Bulletin 2(4): 76. Aug. 1946.

Deevey, Edward S., Jr. LIFE TABLES FOR NATURAL POPULATIONS OF ANIMALS. Abstract in Biometrics 3(1): 59-60. Mar. 1947. [Published in full in Quarterly Review of Biology 22(4): 283-314. 1947.]

Fry, F. E. J. STATISTICS OF A LAKE TROUT FISHERY. Biometrics 5(1): 27-67. 1949.

Lury, D. B. de ON THE ESTIMATION OF BIOLOGICAL POPULATIONS. Biometrics 3(4): 145-167. 1947.
Discusses mathematical formulations of biological systems.

Miller, R. B. PROBLEMS OF OPTIMUM CATCH IN SMALL WHITEFISH LAKES. Biometrics 5(1): 14-26. 1949.

Moran, P. A. P. SOME REMARKS ON ANIMAL POPULATION DYNAMICS. Biometrics 6(3): 250-258. 1950.

Moran, P. A. P. A MATHEMATICAL THEORY OF ANIMAL TRAPPING. Biometrika 38(3/4): 307-311. 1951. [From review by C. H. Blake in Bird-Banding 23(2).]
"The theory is based on kill trapping but is useful for the discussion of the assumptions involved."

Oaklund, G. B. AN APPLICATION OF SEQUENTIAL ANALYSIS TO WHITEFISH SAMPLING. Biometrics 6(1): 59-67. 1950.

Parker-Rhodes, A. F. SOME APPLICATIONS OF TAXONOMIC DISTRIBUTIONS. Abstract in Biometrics 8(2): 177-179. June 1952.

Ricker, W. E. SOME APPLICATIONS OF STATISTICAL METHODS TO FISHERY PROBLEMS. Biometrics Bulletin 1(6): 73-79. 1945.
Of interest to game technicians.

Royce, W. F. A METHOD OF ESTIMATING THE NUMBER OF SMALL FISH FRY. Listed in Biometrics 2(5): 92. Oct. 1946.

Schuck, H. A. AN APPLICATION OF MULTIPLE REGRESSION METHODS TO GROWTH STUDIES IN FISH POPULATIONS. Listed in Biometrics 2(5): 92. Oct. 1946.

Schuck, H. A. RELATIONSHIP OF CATCH TO CHANGES IN POPULATION SIZE OF NEW ENGLAND HADDOCK. Biometrics 5(3): 213-231. 1949.

Schumacher, F. X. STATISTICAL METHOD IN FORESTRY. Biometrics Bulletin 1(3): 29-32. 1945.

WILDLIFE--BIOMETRICS--Continued

Wadley, F. M. AN APPLICATION OF BIOMETRICS TO ZOOLOGICAL CLASSIFICATION. Abstract in Biometrics 6(2): 184. 1950.

Widrig, T. M. ESTIMATING TOLERANCE LIMITS FOR THE AGE COMPOSITION OF A POPULATION OF FISH, AS DERIVED FROM RANDOM SAMPLES WITHIN LENGTH STRATA. Abstract in Biometrics 7(3): 301. Sept. 1951.

WILDLIFE--ECONOMIC AND OTHER VALUES

Biehn, Earl R. CROP DAMAGE BY WILDLIFE IN CALIFORNIA, WITH SPECIAL EMPHASIS ON DEER AND WATERFOWL. California Department of Fish and Game, Game Bulletin no. 5: 1-71, illus. 1951.
A detailed account of many types of damage done by deer and waterfowl, the losses caused by the damage, and of control methods that have been or may be used. The only practical solution to the deer problem is herd reduction, unpopular as that is, but the waterfowl situation is brighter. Waterfowl depredations can ruin individual farmers, but the aggregate cash value of waterfowl is so much greater than that of the harm they do that large areas are being acquired and manipulated to provide enough food for the birds that they need not visit private holdings. Also, waterfowl can be frightened from large tracts by practical devices such as revolving lights and rifle grenades.

Wallace, Robert F. ECONOMIC ASPECTS OF WILDLIFE RESOURCES OF THE STATE OF WASHINGTON. State College of Washington Press, Economic and Business Studies, Bulletin no. 19: vii + 42, illus. Feb. 1952. $1.00.
This scientifically prepared study (the author is a professor of economics) includes sections on methodology, analysis of expenditures, value of wildlife compared with that of other industries, and evaluations of wildlife resources by other states. Emphasis is on expenditures by sportsmen. These were much more than the sales of the state's lumber yards, and almost twice as great as the total sales of liquor stores. It is estimated that resident license holders spent an average of $200 per capita in pursuit of fish and game during the 1950 seasons for a total of $80,000,000. Average annual cost for fishing was $125; for big game, $88; for upland game, $74; for waterfowl, $60. If the state's $20,000,000 commercial fish catch is added, the total of $100,000,000 was spent on wildlife or its pursuit in 1950 in Washington alone. Figures for many states would be lower, but available figures are not entirely comparable. Sampling problems involved in such studies are discussed.

WILDLIFE--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Calhoun, John B. THE SOCIAL ASPECTS OF POPULATION DYNAMICS. Journal of Mammalogy 33(2): 139-159. May 1952.
The author draws on a wide variety of literature and personal research to show that social and psychological factors are important population controls. They may stabilize a population at a level apparently well below carrying capacity. Optimum numbers may be far below maximum numbers. Reactions and cultural patterns may vary with circumstances. Suggestions are made for field and laboratory study of the interrelationship between sociality and population dynamics. The article contains a number of worth while ideas.

Darling, F. Fraser. SOCIAL BEHAVIOR AND SURVIVAL. Auk 69(2): 183-191. April 1952.
The author shows that the stimulation resulting from contacts with other individuals of the species is beneficial or necessary to many birds. Members of groups feed and breed better than isolated individuals or pairs. Defense of territory and male combat are usually formalized, harmless displays that provide valuable, if not necessary, stimulation. We should largely abandon the idea that they are "aggressive behavior." Birds often group their territories or nest sites when there is no need to do so; they are attracted to one another and profit from the stimulation of territorial conflicts. The situation is similar in red deer and Atlantic seals.

WILDLIFE--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION--Continued

Slijper, E. J. and J. M. Burgers. FLIGHT AMONG ANIMALS (De Vliegkunst in het Dierenrijk). E. J. Brill, Ouden Rijn 33a, Leiden, Holland. viii + 178 p. 1950. 14.50 guilders. [From review by D. S. Farner in Bird-Banding 23(2).]
"This interesting book represents a condensation of a tremendous amount of information concerning the physics and biology of animal flight with emphasis on the flight of birds...The numerous illustrations and tables will make it very useful even to those who are unable to read Dutch." Topics include: history of knowledge of animal flight; groups of flying animals, living and fossil; aerodynamics in relation to animal flight; structure of flying animals; comparisons of different groups; gliding and flapping flight.

Tinbergen, Nicholas. THE STUDY OF INSTINCT. Oxford University Press. xii + 228 p. 1951. $7.00. [From reviews by F. A. Brown, Jr. and G. C. Stephens in Ecology 33(2), and by T. H. Waterman in American Scientist 40(3).]
"The first half of the book is a discussion of the characteristics of instinctive behavior and its endogenous and exogenous causal factors.....The remainder of the book consists of essays on the ontogeny, phylogeny and adaptiveness of instinctive behavior." Many examples are used, and the book is enjoyable and fascinating reading. The work is important for the theoretical framework it presents, and for the review of European studies that it provides. There is a bibliography of nearly 300 items.

WILDLIFE--BIOTAS, COMMUNITIES, GENERAL ECOLOGY

Anonymous. WILDLIFE OF FLORIDA. Florida Game and Fresh Water Fish Commission. 1-18 p., illus. No date. 1951?
Brief popular essays on the habits and Florida status of the chief game animals.

Berrill, N. J. THE LIVING TIDE. Dodd, Mead and Co. 256 p., illus. 1952. $4.00. [From review by K. F. Mather in American Scientist 40(3).]
"Marine life inhabiting the Atlantic coastline from Florida to Maine provides most of the material for this attractive volume by the Strathcona Professor of Zoology at McGill University...the general reader will find the book highly informative and immensely interesting. The sands, the limestone reefs, the rocky pools, and even the stagnant waters of a moat have been carefully explored by Dr. Berrill and have yielded to him secrets from the lives of such tenants as the horseshoe crab, the turtle, the sea urchin, the jellyfish, and many more. Whole chapters are devoted to the exclusive sea anemone, the squid and the catfish, each of which deserves particular attention. There is also a brief but worth-while visit to the Pacific Coast around Carmel and Monterey, where the abalone is found." The book is recommended "either for handy reference or just for plain enjoyment."

Hayward, C. Lynn. ALPINE BIOTIC COMMUNITIES OF THE UINTA MOUNTAINS, UTAH. Ecological Monographs 22(2): 93-120, illus. April 1952.
The author describes the various aquatic and terrestrial communities, particularly their plants and invertebrates, and discusses successions and biotic relationships of the area. Much information is given on foods, habits, and reproduction of the pika (O. p. uinta). Similar, but less extensive information is given on the only other resident mammal, the marmot (M. flaviventris). Habits and habitats of small mammals taken on trap lines are briefly discussed. Notes are given on the status and habits of birds of the area.

Illingworth, Frank. WILD LIFE BEYOND THE NORTH. Charles Scribner's Sons, N. Y. 168 p., illus. 1952. $3.75. [From Nature Magazine 45(6).]
"The author of this book has traveled widely 'beyond the north' and has devoted special study to the plant and animal life that is found in a region that most people think of as a land of desolation. This interesting account of the Arctic animal's life will change that conception and also provide fascinating reading."

WILDLIFE--BIOTAS, COMMUNITIES, GENERAL ECOLOGY--Continued

Klingel, Gilbert. THE BAY. Dodd, Mead, N. Y. x + 278 p., illus. 1951. $4.00. [From review by R. T. Abbott in Scientific Monthly 74(1).]
"This unusually well-written book about the natural history of Chesapeake Bay is filled with many poignant passages of description. Nature's sounds, sights, and odors are experienced as the author takes the reader from one end of the bay to the other, from the plankton-teeming surface to the olive-colored bottom 50 feet below. Few naturalists have ever explored and recorded as intimately and as interestingly as Klingel has done in The Bay. The ways of birds, mammals, fishes, insects, and even the lowly jellyfish and protozoa are written about with great insight and feeling."

Knott, Norman P. and Dan C. Barnett. WASHINGTON GAME. Washington Department of Game, Biological Bulletin no. 9: 1-18, illus. 1949. Revised edition, 1952.
All game birds and mammals of the state are included. For most of them there is a brief description, and statements of habitat, range, and abundance in state. Short notes on habits and limiting factors are given for many forms. Stocking records are provided for introduced or transplanted game. There are 6 range maps, each showing the distribution of 2 or more forms in the state.

Peterson, Roger Tory. WILDLIFE IN COLOR. Houghton Mifflin Co., Boston. 189 p., illus. 1951. $3.00.
More than 450 of the pictures that originally appeared on wildlife stamps of the National Wildlife Federation are beautifully reproduced here. They are grouped into such units as Birds of the Pine Barrens, Mammals of the Streams, Fishes of the Ocean, and Trees of the South. The text is largely a running commentary on the subjects illustrated, but it is interesting, well written, and contains a great deal of sound conservation information. The book makes a fine present for amateur naturalists and should serve to whet interest in intelligent conservation.

Saunders, George B., Ancil D. Holloway, and Charles O. Handley, Jr. A FISH AND WILDLIFE SURVEY OF GUATEMALA. U. S. Fish and Wildlife Service, Special Scientific Report - Wildlife, no. 5. iii + 162, maps. June 1950.
The basic field work for this report was done in the springs of 1946 and 1947 as part of the international cooperation program. Many additional data were gleaned from the literature and interviews with residents. The report has 3 sections, 1 on gamebirds and shorebirds (Saunders), 1 on fisheries (Holloway), and 1 on the larger mammals (Handley). Conservation measures are discussed throughout. Each of the game and shore birds is discussed as to names, status, description, distribution, records, habits and hunting. Similar treatment is accorded all mammals of squirrel-size or larger. There is also a popular key to these mammals.

Wright, John T. and Jerome S. Horton. CHECKLIST OF THE VERTEBRATE FAUNA OF SAN DIMAS EXPERIMENTAL FOREST. U. S. Forest Service, California Forest and Range Experiment Station, Miscellaneous Paper no. 7: ii + 15. Nov. 1951.
This forest is in eastern Los Angeles County. The paper briefly characterizes the plant associations and lists the mammals, birds, reptiles, and amphibians. Common and scientific names are given, and the status and/or habitat are indicated.

WILDLIFE--MORTALITY FROM INSECTICIDES, WEATHER, CARS, ETC.

Blagbrough, Harry P. REDUCING WILDLIFE HAZARDS IN DUTCH ELM DISEASE CONTROL. Journal of Forestry 50(6): 468-469. June 1952.
In 1950, elms at Princeton, N. J. were heavily sprayed with 2% DDT emulsion in spring and 1% emulsion in summer. There was much run-off, with 130-196 pounds of DDT per acre being deposited in the top 3 inches of soil. 122 dead birds were found and the kill is believed to have been at least 4 times that great. Five dead gray squirrels were also found. It is recommended that DDT application be made with a mist-blower where practicable, and that spraying

WILDLIFE--MORTALITY FROM INSECTICIDES, WEATHER, CARS, ETC.--Continued

be done before April 15, prior to arrival of most migrants, and after July 15, when most young are well grown. Fish ponds and bird baths should be covered during spraying. Streets and gutters should be flushed or swept.

Cottam, Clarence. CHEMICAL CONTROLS VS. WILDLIFE. North Dakota Outdoors 14(12): 10-11. June 1952. [Reprinted in entirety from Ducks Unlimited Quarterly for Spring 1952.]
The effects of new insecticides and herbicides are reviewed. The need for intensified study of effects of the multitude of new chemicals is emphasized. With study, satisfactory compromises are usually worked out; producers and users of the chemicals are unexpectedly cooperative.

Linduska, J. P. WILDLIFE IN A CHEMICAL WORLD. Audubon Magazine 54(3): 144-149, 190, illus. May-June 1952.
Effect of insecticides (chiefly DDT) on bird and other animal populations. Reasons for variations are discussed.

WILDLIFE--MANAGEMENT--GENERAL

Chamberlain, Everett B. FOREST MANAGEMENT FOR WILDLIFE. Delaware Game and Fish Commission. 1-11 p. May 1949.
Sketches the history of forest management and game management and points out the need of giving full consideration to both timber and wildlife in practical operations. Both interests can be served if the manager wishes to do so. Bibliography of 45 selected titles.

Ferguson, Jack W. INVESTIGATION OF THE THREE BAR GAME MANAGEMENT AREA. Arizona Game and Fish Commission, Arizona Game Surveys, Project Job Completion Reports, 1951. Project 53 R - WP 5 - J 6. 1-13 p., illus. Mar. 31, 1951.
Description of this 42,000-acre area (near Roosevelt Lake) and its vegetation. The area is formerly over-grazed Forest Service land now devoted to wildlife management. The range is now in good condition, suitable for all forms of game. More water developments are being put in. Predator control is vigorous; catches are reported. Gambel quail and javelina are present in good numbers. Deer are currently scarce; transplants are reported. Developments recommended include reintroduction of bighorn sheep.

Knipe, Theodore. CLASSIFICATION, POPULATION TREND AND GAME DISTRIBUTION SURVEYS BY MANAGEMENT UNITS. Arizona Game and Fish Commission, Arizona Game Surveys, Project Job Completion Reports, 1951. Project 53 R - WP 3 - J 4 & 5. 1-20 p., illus. June 23, 1951.
This report on surveys of large areas in Southeastern Arizona treats range and water conditions; numbers of big game, small game, predators, and livestock seen; comparisons of present range and game conditions with those of past years; and recommendations for hunting seasons and regulations. Many forms of game are mentioned, but emphasis is on white-tailed and mule deer. Drought and overgrazing are dominant factors in the region. Few forms of wildlife seem to be doing well, but none of the game species seem to be in critical condition.

Levi, Herbert W. EVALUATION OF WILDLIFE IMPORTATIONS. Scientific Monthly 74(6): 315-322, illus. June 1952.
A vigorous attack on game bird introduction. Many examples are given of animals and plants that unexpectedly became pests in new lands. Most of these examples are interesting and unfamiliar. A surprisingly large number of introduced animals have eliminated native forms through hybridization. Others change their habits and become nuisances as they never were at home. Plans call for liberating disease-free birds experimentally on small areas, but despite all precautions, recently introduced game birds have died of various parasites before they could be released. And, asks the author, what is to keep the birds on the experimental area? Capercaillie, for example, can easily fly to the mainland from the island on which they were planted. A flourishing game animal and a flourishing pest are much alike ecologically; it is impossible to tell

WILDLIFE--MANAGEMENT--GENERAL--Continued

which way an introduction will work, if it works at all, which most introductions do not. The author is able to cite only 2 instances where undesirable exotics were exterminated by man.

Wagner, Richard A. ARIZONA SURVEY OF THE WILDLIFE AND FISHERIES RESOURCES OF THE LOWER COLORADO RIVER. Arizona Game and Fish Commission. 74 p., illus. 1952.

Consists of 5 separately paged reports. The first report describes the river and its surroundings. The second tells what kinds of waterfowl use the area, how many there are at different points, and how waterfowl food resources and hunting pressure are distributed. Recommendations are made for habitat improvement and for heavier but better distributed waterfowl hunting. The third report is on a survey of local abundance of Gambel quail, cottontail, mourning doves, and white-winged doves. Hunting pressure on them in different areas is estimated. Predation and poaching are not discussed, but the sole recommendations are for better law enforcement and for more control of predators with 1080. The author seems to feel that each area he studied should have a 1080 program. The fourth report discusses bighorn sheep and mule deer, their numbers, seasonal movements, condition of their range, competition from feral stock, hunting pressure, and poaching. Recommended are: better access roads, heavier deer harvesting (population is about 910), controlled trophy hunt for bighorn (population is about 436), and expanded predator control (no predation was observed). The present 1080 program is not sufficiently effective against coyotes in the higher elevations, or against bobcats at any elevation. The fifth report is on fisheries.

WILDLIFE--MANAGEMENT--HARVESTS AND HUNTING

Dahl, Herbert C. GAME MANAGEMENT AREA PAYS DIVIDENDS TO HUNTERS. West Virginia Conservation 16(2): 18-19. May 1952.

Point Pleasant Game Management Area, West Virginia, is a 2,500-acre tract of abandoned farm land now partly farmed and managed for game. The present paper gives hunting statistics for 1951, age and sex ratios for quail and rabbits taken, and estimated part of the population bagged. 726 hunters had a 19-day season and bagged 264 quail, 223 rabbits, 31 squirrels, and 4 grouse. It is believed that the bag might well have been twice as large for quail and five times as large for rabbits.

Kelley, Claude D. WHAT OUR COURTS MUST LEARN: GAME LAWS ARE NO JOKE. Outdoor Life 107(3): 21-23, 86-88, illus. March 1951.

The author cites many cases of flagrant game law violations that the courts encouraged, dismissed, or punished lightly. In state after state game laws are practically a joke because of the attitudes of many courts. There is no easy remedy. Judges should be more aware of conservation needs, but the laws and regulations should be simpler, and purely technical violations should not be stressed.

WILDLIFE--MANAGEMENT--FARM

Caulk, Mrs. Elizabeth T. AN ECONOMIC USE FOR THE WOODS EDGE. Delaware Board of Game and Fish Commissioners. 1-6 p., graph. Dec. 1950.

Author's summary: "During the crop years of 1949-50, 3,110 linear feet of corn planted next to the woodland edge were measured for yield. A 7-foot swath was used as this was the equivalent of two standard corn rows. It was found in the 16 samples of corn taken on farms in central Delaware that under the prevailing prices only after leaving the woodland edge 15 feet can the farmer expect a yield adequate to pay expenses for the corn crop planted. On ten farms picked at random in Kent County, Delaware it was found that a total of 9 acres now used as crop land might more profitably be devoted to wildlife use." No data are given to show that "wildlife use" would be profitable to the farmer, or that his cash loss would be less if the borders were given over to wildlife plants.

WILDLIFE--MANAGEMENT--FARM--Continued

Crooks, Malcolm P. MULTIFLORA - MIRACLE OR MENACE? West Virginia Conservation 16(3): 10-12, illus. June 1952.
Discusses the pros and cons of this rose. The author maintains that its spread is almost entirely on abandoned lands where some form of shrubby growth is bound to take hold. The thornless variety, not used in conservation work, spreads worse than the thorny variety. Multiflora rose is easily killed by herbicides. "...ordinary good farming practices such as grazing, plowing, mowing, and pasture management will keep multiflora rose in its proper place... Multiflora rose has a well earned place on the American farm."

Durell, James S. FARM GAME HABITAT RESTORATION. Kentucky Division of Game and Fish, Federal Aid Project W-23-D. 1-27 p. + many tables, form sheets, etc. Illus. Feb. 1952.
A 3-year report on the Kentucky farm game program, what it has accomplished, what it has discovered, and what difficulties it encountered. Plants chiefly used were bicolor lespedeza and multiflora rose. Instructions are given for their successful establishment. The chief difficulty was getting the plants on the land. Weather was often unfavorable, farmers and sportsmen were commonly indifferent, technical help was spread thinly, and many plants went to waste. No real evaluation of the plantings can yet be made, but almost every bicolor stand has quail, and bicolor was heavily gnawed by rabbits in a hard winter. Some significant excerpts follow: "Although practically every sportsmen's club in Kentucky has a quail-raising project, it has been difficult to interest them in food and cover plantings." "Multiflora rose will spread into idle land, but young plants are destroyed by grazing or cultivation. Four plots six years old or older were examined in Kentucky, and no spreading whatsoever was found." "Superiority of large bicolor plants has been repeatedly demonstrated...Large plants can be planted hurriedly...and...can keep pace with the weeds." "Apparently about two-thirds of the bicolor seed fell to the ground in January and February."

Geiger, R. and others. FENCEROW PROBLEMS (Die Problematik der Heckenlandschaft). Erdkunde 5(2): 105-157. 1951. [From review by H. W. Levi in Journal of Wildlife Management 16(2).]
Dr. Levi has provided an informative review of this 1951 symposium. Apparently crops are often strongly favored by hedgerows, a point of importance to wildlife managers. The reviewer tells how and to what extent crops may be so favored, and discusses moisture and wind relationships as well as harborage of beneficial and harmful insects and other animals.

Hall, Gordon E. FARM PONDS - FOR CATTLE OR FOR FISH? Oklahoma Game and Fish News 8(5): 4-6, illus. May 1952.
Stock watering tanks are of little value for fish if cattle roil the water and kill vegetation on the banks. Ordinarily, separate ponds must be built for livestock and fish, and few farmers can afford this. It is sometimes feasible, however, to admit stock only to a small neck of a fish pond. The author feels that, "Two acres is a good minimum size fish pond."

King, Malcolm E. SMALL REFUGES IN A FARM GAME PROGRAM. Maryland Conservationist 29(2): 16-19, illus. Summer 1952.
Reprinted from Proceedings of the 8th Annual Northeast Wildlife Conference (see Wildlife Review no. 68, p. 9).

Schreiner, Keith. THE MAIN OBJECTIVE OF THE HABITAT DEVELOPMENT PROGRAM. North Dakota Outdoors 14(11): 8-9, illus. May 1952.
It is estimated that the state should have a 4-acre wildlife cover planting every 3 miles, or 4 per township. If the state were to put them all in it would take $2,500,000 and 25 years, and by then the older ones would need replacement. The state is therefore making the plantings largely for purposes of demonstration, hoping farmers will take up the idea.

WILDLIFE--MANAGEMENT--FARM--Continued

Webb, Cleon. THE FLUSHING BAR IS SAVING GAME. Ohio Conservation Bulletin 16(6): 7, 11, 31-32, illus. June 1952.
Figures are given to show that use of flushing bars saves about 60% of the game (especially pheasants) that would be killed in mowing. Present flushing bars are suitable for use with tractors. The Ohio Division of Wildlife has over 300 of these bars that farmers may obtain through district supervisors.

Westveld, R. H. and Ralph H. Peck. FORESTRY IN FARM MANAGEMENT. John Wiley & Sons. xi + 340 p., illus. 1951. $5.00. [From review by W. L. Slate in American Scientist 40(3).]
Second edition of a good textbook. It has 102 figures.

WILDLIFE--MANAGEMENT--PREDATION AND CONTROL

Elder, William H. and Charles M. Kirkpatrick. PREDATOR CONTROL IN THE LIGHT OF RECENT WILDLIFE MANAGEMENT CONCEPTS. Wilson Bulletin 64(2): 126-128. June 1952.
Mergansers are shot by thousands on Elephant Butte Reservoir in New Mexico despite the need of most waters for heavier predation on fishes. Coyotes are being destroyed by 1080 distributed by airplanes. Crows are bombed at their roosts. Are such measures having the expected results, or are they merely causing intensified breeding by the survivors (the concept of inversity)? Has coyote control influenced the spread of the species? Crows, skunks, and other nest robbers insure a staggered nesting season so that a crop of young birds is never completely vulnerable to spring climatic catastrophes. Nest predators may actually insure a higher average productivity. "...it becomes increasingly clear that the old dichotomy of 'harmful' and 'beneficial' is a meaningless and fallacious classification of living things.....Unless we insist upon the forcible excision of this relic of past thinking from all our biological books, we will continue to raise generations which classify living things only on an economic standard.....If we are to have and to enjoy birds and to harvest wildlife on a permanent basis, we must provide the next generation with criteria other than monetary for judging the recreational, educational and esthetic value of landscape and wildlife."

McGinnes, Burd S. HAWKS, OWLS, AND FOXES. Delaware Game and Fish Commission. 1-18 p. July 1950.
"The purpose of this paper is to present the findings, deductions, and conclusions of various investigators along with their recommendations of treatment of various species of hawks, owls, and foxes. It is not exhaustive but is relatively conclusive..." The author concludes that the predation problem is complex, that most predators have beneficial aspects, and that money is better spent (at least in Delaware) on habitat improvement than on predator control.

WILDLIFE--REPORTS OF ORGANIZATIONS

British Columbia. REPORT OF PROCEEDINGS, FIFTH ANNUAL GAME CONVENTION, APRIL 25-28, 1951, VANCOUVER, B. C. British Columbia Game Department. 1-242, illus. 1951.
This volume consists of prepared papers and discussions on a variety of subjects, all pertaining to British Columbia wildlife work. The prepared papers, exclusive of those on fisheries, are: Policies of the British Columbia Game Commission; Provincial Park Administration; Pheasants Unlimited; The Diseases and Parasites of Big Game Mammals of Western Canada [discussed in Wildlife Review no. 67 p. 20]; A Summary of the Resident Hunter Returns for 1950; The Predatory Animal Control Programme in British Columbia; Summary of Activities of the Division of Game Management and Research of the B. C. Game Department, 1950; Upland Game Birds Studies in British Columbia, 1950; Northwest Fur Trade; The Big Issues in Conservation. Predator control by 1080 and other agents is extremely vigorous in the Province. There is considerable pressure for more game bird stocking.

WILDLIFE--REPORTS OF ORGANIZATIONS--Continued

Brockelbank, J. H. ANNUAL REPORT OF THE DEPARTMENT OF NATURAL RESOURCES OF THE PROVINCE OF SASKATCHEWAN FOR THE FISCAL YEAR ENDED MARCH 31, 1951. 1-150 p., illus. 1951.

Report of the game branch occupies pages 85-101 and includes: status and harvest of beaver and muskrat; surveys and harvests of game birds; status and harvest of big game; damage done by big game; list of game preserves; fur farming; predator control; wild fur harvests and pelt prices (by species), 1949-51; graphs of wild fur bearer take, 1915-50. These graphs clearly demonstrate cyclic trends in several species. The antelope population declined and the season was closed. Predator control was pushed by means of 1080, coyote-getters, bounties, and education of school children in control methods. Coyotes were much reduced. Hungarian partridge and sharp-tailed grouse were approaching a peak population.

Connecticut. REPORT OF THE BOARD OF FISHERIES AND GAME, 1950-1951. Digest of Connecticut Administrative Reports to the Governor '50-'51, vol. 5: 264-274. 1951.

Includes brief reports on enforcement, hunting and fishing accidents, game purchase and distribution, cooperative programs (with clubs), state hunting grounds, regulated shooting areas, insecticidal spraying, and the P-R program.

Cunningham, James C. and Frank R. Butler. [BRITISH COLUMBIA] PROVINCIAL GAME COMMISSION REPORT FOR THE YEAR ENDED DECEMBER 31st 1950. Victoria, British Columbia. 1-85 p. 1951.

Includes: statements on the condition of all classes of game in different areas; a summary of research and management studies; a report on the active predator control system; figures on the take of big game, furbearers, and predators; and figures on game bird liberations.

Gilbert, Paul T. REPORT OF THE [NEBRASKA] GAME, FORESTATION AND PARKS COMMISSION, 1951. 1-26 p. 1952.

Includes brief statements of activities and achievements in education, enforcement, land management, game farming, stocking, and P-R projects.

Johnson, Robert H. ANNUAL REPORT, MASSACHUSETTS DIVISION OF FISHERIES AND GAME, 1950-1951. 1-17 p. 1951.

Includes brief reports on game bird propagation, wildlife research and management projects, financial statements, and summary of regulations and new legislation.

McClintic, C. F. ANNUAL REPORT OF THE CONSERVATION COMMISSION OF WEST VIRGINIA, JULY 1, 1950 TO JUNE 30, 1951. 1-101 p., illus. 1951?

The report of the Division of Game Management (p. 83-101) reviews game conditions and discusses game farms, restocking, refuges and improvements on them, beaver management and harvest, and P-R projects. The latter include cover mapping, farm-game management, deer studies, and studies of population trends in quail, grouse, turkey, gray squirrel, bear, and chukar partridge. The bear population is very low; it is recommended that the Legislature require each bear killed to be tagged as deer now are. This would stop much of the promiscuous killing and supply more information.

Mississippi. NEW GAME AND FISH COMMISSION ORGANIZED UNDER NEW LAW. Mississippi Game and Fish 15(10): 3-6, 8-9, illus. April 1952.

Describes the new commission. The new law is given in full.

Oregon Game Division. 1952 ANNUAL REPORT, OREGON STATE GAME COMMISSION, GAME DIVISION. 1-128 p., illus. 1952.

It is difficult to overestimate the value of this series of reports, 9 of which have been issued. They are not annual reports in the usual sense, but virtual encyclopedias of factual information on the current status of game, game areas, and game problems in the state. All forms of game are treated, many of them in detail. Numbers, trends, kill, hunting statistics, and management procedures are discussed with the aid of numerous tables. In the present

WILDLIFE--REPORTS OF ORGANIZATIONS--Continued

volume, 44 pages are devoted to different forms of big game, 46 pages to game birds, 7 pages to beaver and other furbearers, 4 pages to predators, 8 pages to habitat improvement, and 6 pages to work on specific management areas. This compilation is prepared annually for reference of the state game commission, but should be of value to all persons interested in western game.

Shapton, Warren W. PITTMAN-ROBERTSON PROGRESS REPORT, 1938-1951. Michigan Department of Conservation. 1-26 p., illus. 1952. [Reprinted from Michigan Conservation 20(1-5), 1951.]
Discusses operation of the law, land acquisition, development, research, coordination, and maintenance. The treatment is popular, but there is much factual information on finances, programs, and results.

MAMMALS--FAUNAS AND MANUALS

Anonymous. FURBEARERS AND GAME MAMMALS OF OKLAHOMA. 3rd edition. Oklahoma Game and Fish Department. 1-43 p., illus. June 1951.
A popular bulletin. Each important game or fur mammal is illustrated, its habits and economics are discussed, and general suggestions are made for its management. Bear, otter, beaver, antelope, cougar, elk, and bison are given brief treatments as rare or extinct forms, and the present status of each is stated. Otter and cougar seem to be extinct in the state.

Barger, N. R. WISCONSIN MAMMALS. Wisconsin Conservation Department Publication 351-51. 1-54 p., illus. 1951?
Issued for public information, this booklet should serve its purpose rather well. Five pages give general information about mammals; 3 pages are devoted to a check-list giving habitat and range in state; and the rest of the pamphlet contains life history accounts of most species. These accounts vary in length from 2 or 3 paragraphs up to a page and are popularly written. There are numerous photographs, but no other aids to identification. More information on status in the state would be welcome.

Cameron, Austin W., and William A. Morris. THE MAMMALS OF THE LAKE MISTASSINI AND LAKE ALBANEL REGIONS, QUEBEC. Bull. Nat. Mus. Canada, Ottawa, no. 123: 120-130. 1951. [From Journal of Mammalogy 33(2).]

Eifert, Virginia S. ILLINOIS MAMMALS TODAY AND YESTERDAY. Illinois State Museum, Springfield. Story of Illinois Series no. 2: 1-38, illus. 4th printing, revised, 1951.
This booklet, apparently written for children visiting the museum, has photographs of exhibits of the better known Illinois mammals. A few paragraphs of text under each photograph provide enough well spiced natural history to whet the interest.

Glass, Bryan P. KEY TO THE SKULLS OF NORTH AMERICAN MAMMALS. Burgess Publishing Co., Minneapolis. 116 p., illus. 1951. [From Journal of Mammalogy 33(2).]

Matthews, L. Harrison. BRITISH MAMMALS. Collins, London. New Naturalist Library. xii + 410, illus. 1951? 23s. [From review by "M. C. M." in Annals & Magazine of Natural History, ser. 12, vol. 5, no. 52.]
"Dr. Matthews has placed at the disposal of the amateur and professional naturalist a book crammed with his vast experiences on the life-history and habits of British mammals...The thirteen chapters cover the whole series of British mammal fauna, and the 380 pages of text are rounded off with an appendix containing a tabulated list of living British mammals and a copious bibliography..." There are 16 colored plates, 48 black and white plates, and 92 text figures.

MAMMALS--FAUNAS AND MANUALS--Continued

Parker, Harry C. MAMMALS OF YOSEMITE NATIONAL PARK. Yosemite Nature Notes 31(6): 51-105, illus. June 1952. 50¢.
A popular account, with considerable natural history information and many illustrations. For technical use there is a complete check-list, pp. 104-105.

MAMMALS--PARASITES AND DISEASES

Chandler, Asa C. and Dorothy M. Melvin. A NEW CESTODE, OOCHORISTICA PENNSYLVANICA AND SOME NEW OR RARE HELMINTH HOST RECORDS FROM PENNSYLVANIA MAMMALS. Journal of Parasitology 37(1): 106-109. Feb. 1951. [From Journal of Mammalogy 33(1).]

Ecke, Dean H. and Robert Holdenried. TULAREMIA FROM A WOOD RAT IN NEW MEXICO. Public Health Reports 67(6): 588-589. June 1952.
In one Neotoma albigula; considered merely a chance infection. Infected ticks were found on Sylvilagus auduboni; these cottontails were being found dead during the previous 8 months, but many live ones remained.

Hallberg, Carl William. DIOCTOPHYMA RENALE (GOEZE, 1782), A STUDY OF THE MIGRATION ROUTES TO THE KIDNEYS OF MAMMALS AND RESULTANT PATHOLOGY. PhD thesis, University of Michigan, 1952. [From long abstract in Dissertation Abstracts 12(2).]
This kidney worm, one of the largest nematodes, is a parasite of mustelids and occasionally other mammals.

Morlan, Harvey B. HOST RELATIONSHIPS AND SEASONAL ABUNDANCE OF SOME SOUTHWEST GEORGIA ECTOPARASITES. American Midland Naturalist 48(1): 74-93. July 1952.
Records of a wide variety of ectoparasites from thousands of specimens of 31 kinds of mammals, especially domestic rats.

MAMMALS--CONTROL, MORTALITY

-----HANDBOOK ON PESTICIDES AND THEIR USES IN FLORIDA AGRICULTURE. Agricultural Experiment Stations, Gainesville, Florida. 131 p. Revised Feb. 1, 1951. $1.00.
Participating in this compilation was the Rat Control Research Laboratory of the U. S. Fish and Wildlife Service.

Ball, Walter S. [REPORT OF] BUREAU OF RODENT AND WEED CONTROL AND SEED INSPECTION. State of California Department of Agriculture, 32nd Annual Report 40(4): 228-237. Oct.-Dec. 1951. (1952)
Report on predator and rodent control in California, 1951. Species discussed include muskrat and nutria. Problems and results with many vertebrate pests are discussed briefly. Tables show quantities of various baits used, acreages covered, and take of predators.

MAMMALS--SHREWS, MOLES, BATS

Conaway, Clinton H. LIFE HISTORY OF THE WATER SHREW (SOREX PALUSTRIS NAVIGATOR). American Midland Naturalist 48(1): 219-248, illus. July 1952.
Based on work in Western Montana, Sept. 1947 to Sept. 1949. The report seems careful and detailed. Data are given on habitat, age determination (by tooth wear), age classes (related to sexual maturity), weights and measurements, reproduction, sexual cycle in both sexes, food habits, parasites, dermal glands, molt, habits and behavior in captivity.

Eadie, W. Robert. SHREW PREDATION AND VOLE POPULATIONS ON A LOCALIZED AREA. Journal of Mammalogy 33(2): 185-189, illus. May 1952.
Studies over several years of Blarina predation on Microtus, and of populations of these animals, suggest that Blarina actually may be able to lower Microtus populations and even to suppress a cyclic peak.

MAMMALS--RABBITS AND PIKAS

Corbeau, Louis. JACKS ARE BIG GAME! North Dakota Outdoors 14(11): 10-11, illus. May 1952.
Account of hunting white-tailed jackrabbits with guns and with drives. The species periodically reaches pest abundance in North Dakota. Thousands are killed; most are sold for the hide, some young ones are eaten. The author tells how to handle and clean these hares to avoid tularemia. Most states have no closed season and no bag limit for jackrabbits.

Dusi, Julian L. THE FOOD HABITS OF SEVERAL POPULATIONS OF COTTONTAIL RABBITS IN OHIO. Journal of Wildlife Management 16(2): 180-186, illus. April 1952.
The study was made by analysis of pellet contents. Herbaceous plants were the main food except when covered by snow; then woody plants were heavily used. So many common plants are eaten that food is not the most important management consideration. Bluegrass is important, however, and should be well represented in any plantings for rabbit food.

Phillips, Miss W. M., Miss M. N. Stephens, and A. N. Worden. OBSERVATIONS ON THE RABBIT IN WEST WALES. Nature 169(4308): 869-870. May 24, 1952.
Rabbits are recognized as severe pests in parts of Great Britain. They damage crops and compete with livestock. In Pembrokeshire the known catch of rabbit meat exceeds production of veal, mutton, lamb and pork combined. Commercial trapping in the fall takes about 35% of a population, too little to prevent increase. Live trapping (mainly by knotted snares) and marking proved that rabbits are very conservative in keeping to the same warren or area, and that few survive into their second year. One heavily infested farm was treated by fumigation, ferreting and other means so that few rabbits remained. Crops prospered and banks revegetated. Invasion from the borders was slow. The severe effects of rabbits on reseeded pasture is described on the basis of experiments. Many data are given on reproduction and parasitization. Coprophagy was found uniformly, even in sucklings.

Roberts, O. T., Jr. COTTONTAIL RABBIT. Delaware Game and Fish Commission. 1-9 p. March 1950.
The author reviews the habits and requirements of the cottontail and then considers various management measures. Many data are given on the numbers and success of western rabbits released in Delaware and other states. Analysis shows that rabbit introductions are economically unsound and of little real value. The Maryland small refuge system is criticized on the grounds that there is no evidence that the refuges serve to populate the surrounding areas, and that too many would be required to serve a state. Habitat improvement is thought to be the most promising approach.

Yeatter, Ralph E. and David H. Thompson. TULAREMIA, WEATHER, AND RABBIT POPULATIONS. Bulletin of the Illinois Natural History Survey 25(6): 345-382, illus. June 1952.
"When rabbit populations were average, the human tularemia rates followed the curve of the mean or average date of the first 10 freezing autumn nights. When rabbit populations were low, the tularemia rates remained low, even during warm autumns...Delay in the opening of the rabbit-hunting season until December 1, particularly in the Central and Southern zones of Illinois, is recommended as the most practical management method for reducing the amount of human tularemia." The authors give a great deal of information on tularemia in wildlife, vectors, incidence and distribution of tularemia in man (especially in Illinois), correlation of tularemia with weather and rabbit abundance, and methods of avoiding human infection. Illinois cottontails cycle in about 10 year periods, peaks coming at about the same time as those of Microtus ochrogaster. Peaks occur at different times in different regions of the state and are not concurrent with those in Wisconsin.

MAMMALS--RODENTS--GENERAL

Anonymous. POCKET GOPHER CONTROL. U. S. Fish and Wildlife Service, Wildlife Leaflet 340: 1-6, illus. May 1952.
Preferred baits for different regions or different species, bait formulas, bait placement, trapping.

Brennan, James M. TROMBICULA CYNOS EWING, 1937, AND THREE RELATED NEW SPECIES (ACARINA: TROMBICULIDAE). Wasmann Journal of Biology 10(1): 55-65, illus. Spring 1952.
Three new mites of the genus Trombicula from Peromyscus and Neotoma; Illinois, Utah, and California.

Chapman, Arthur O. THE ESTROUS CYCLE IN THE WOODRAT, NEOTOMA FLORIDANA. Univ. Kansas Sci. Bull., Lawrence, 34(pt.1,no.7): 267-299, illus. October 1951. [From Journal of Mammalogy 33(2).]

Ellison, Lincoln and C. M. Aldous. INFLUENCE OF POCKET GOPHERS ON VEGETATION OF SUBALPINE GRASSLAND IN CENTRAL UTAH. Ecology 33(2): 177-186, illus. April 1952.
Studies have been made since 1942 of a 4-acre plot fenced against livestock, which were principally sheep. Gophers (Thomomys talpoides moorei) were controlled on half the plot. Total production of vegetation did not change greatly, but there was a slight tendency for greater production where gophers were present. Rhizomatous plants increased where gophers were present, being able to take over bare areas and to grow especially vigorously where gophers disturbed the soil. Grasses and sedges also tended to increase in the gopher area. Tall forbs increased while annuals and ephemerals decreased on both halves of the plot, presumably because of the exclusion of sheep. The extremely heavy soil was softer and looser where gophers were present. It is concluded that gophers improve the soil and probably increase vegetal production over and above the forage they consume. The original gopher population was estimated at 33 per acre. Females annually produced a single litter averaging 3.23 young. There was a slight excess of males over females.

Harris, Van T. AN EXPERIMENTAL STUDY OF HABITAT SELECTION BY PRAIRIE AND FOREST RACES OF THE DEERMOUSE, PEROMYSCUS MANICULATUS. University of Michigan, Contributions from the Laboratory of Vertebrate Biology no. 56: 1-53, illus. May 1952.
The mice were tested in artificial habitats under laboratory conditions and the results were subjected to rigorous statistical analysis. Mice of the prairie race (bairdi) preferred the artificial grass habitat; mice of the woodland form (gracilis) preferred the tree-trunk habitat. The same results were obtained in total darkness and with mice from which vibrissae were removed. It is concluded that habitat preferences are basically genetic, not merely learned. Hybrids of the 2 forms selected the artificial grass habitat. Factors influencing habitat selection are discussed.

Hooper, Emmet T. A SYSTEMATIC REVIEW OF THE HARVEST MICE (GENUS REITHRODONTOMYS) OF LATIN AMERICA. University of Michigan Museum of Zoology, Miscellaneous Publications no. 77: 1-255, illus. 1952.
Although entitled a systematic review, this paper is an exceptionally thorough monographic revision, with illustrated keys, range maps, detailed considerations of variation on several levels, discussions of phylogeny and evolution, accounts of the habitat of each form, a gazetteer of localities, and many tables, charts, and graphs. U. S. forms that belong to primarily Latin American groups are treated in detail; for each of the other U. S. forms there is given (pages 217-220) synonymy, type locality, distribution, and remarks. The paper sets a high standard for taxonomic studies in mammalogy.

MAMMALS--RODENTS--GENERAL--Continued

Melvin, Dorothy M. and Asa C. Chandler. NEW HELMINTH RECORDS FROM THE COTTON RAT, SIGMODON HISPIDUS, INCLUDING A NEW SPECIES, STRONGYLOIDES SIGMODONTIS. Journal of Parasitology vol. 36, no. 6, sec. 1: 505-510. Dec. 1950. [From Journal of Mammalogy 33(1).]

Murphy, Melvin F. ECOLOGY AND HELMINTHS OF THE OSAGE WOOD RAT, NEOTOMA FLORIDANA OSAGENSIS, INCLUDING THE DESCRIPTION OF LONGISTRIATA NEOTOMA N. SP. (TRICHOSTRONGYLIDAE). American Midland Naturalist 48(1): 204-218, illus. July 1952.
Results of 17 months of work in Payne County, Oklahoma. Discussed are: habitat, den sites, nests, animal associates, activities, foods, economics, water relations, reproduction, parasites. This wood rat is not believed to be of economic importance. Some of the rats store little or no food.

Sealander, John A., Jr. FOOD CONSUMPTION IN PEROMYSCUS IN RELATION TO AIR TEMPERATURE AND PREVIOUS THERMAL EXPERIENCE. Journal of Mammalogy 33(2): 206-218, illus. May 1952.
Food consumption varied inversely with air temperatures, though there were quantitative differences between species. Adjustment of food intake to temperature changes required 8-15 days. Mice accustomed to warm quarters compensated for thin coat by eating more than others when exposed to cold.

Strecker, Robert L. and Peter R. Morrison. OBSERVATIONS ON LEMMINGS FROM BARTER ISLAND, ALASKA. Journal of Mammalogy 33(2): 180-184, illus. May 1952.
Notes on runways, burrows, and nests; growth of a litter of collared lemmings. Captives thrived without drinking.

Voge, Marietta. VARIATION IN SOME UNARMED HYMENOLEPIDIDAE (CESTODA) FROM RODENTS. University of California Publications in Zoology 57(1): 51 p., illus. 1952. $0.75.

MAMMALS--HOUSE RATS AND MICE

Dieke, Sally H. COMPARATIVE ASSAYS OF RODENTICIDES ON WILD NORWAY RATS. II. ACCEPTANCE. Proc. Soc. Exper. Biol. and Med. 69: 593-597. 1948. [From Journal of Mammalogy 33(1).]

Dykstra, Walter W. UP-TO-DATE ON ANTICOAGULANT TYPE RODENTICIDES. Pest Control 20(7): 12, 14, 46, 48. July 1952.
Review of properties and correct uses of Warfarin and notes on related compounds. "...a grave mistake is made in relying upon poisoning operations to do the whole job. If these measures are not supplemented by improvement in environmental sanitation, the causes of infestation are seldom eliminated. Poisons, poisons, and more poisons are not the complete answer."

Emlen, J. T., Jr. MEASUREMENT OF URBAN RAT POPULATIONS. Abstract in Biometrics Bulletin 1(1): 11. Feb. 1945.
"Rat populations in 89 city blocks in Baltimore, Maryland were measured by means of exhaustive trapping campaigns...The curve of catch size on successive nights resembled a geometric progression but gradually leveled out as trap-shy rats became relatively more numerous."--Vincent Schultz.

Fox, Irving. RELATIVE AND SEASONAL ABUNDANCE OF THE COMMON RAT ECTOPARASITES OF SAN JUAN, PUERTO RICO. Journal of Parasitology 37(1): 85-95. Feb. 1951. [From Journal of Mammalogy 33(1).]

Gentile, Joseph. A CRANIOMETRIC STUDY OF THE NORWAY RAT. Journal of Mammalogy 33(2): 190-197, illus. May 1952.
Analytical and statistical study of skull variations in sex and age groups.

MAMMALS--HOUSE RATS AND MICE--Continued

Gunderson, Harold. HOW THE SIOUX CITY STOCKYARDS CONTROLLED ITS RAT POPULATION. Pest Control 20(6): 12, 14, 48, illus. June 1952.
By poisoning campaigns (now largely by Warfarin stations), rat-proofing, and cleaning up nearby dumps. Much cooperative and community action was necessary.

Harrison, J. L. REPRODUCTION IN RATS OF THE SUBGENUS RATTUS. Proceedings of the Zoological Society of London 121(3): 673-694, graphs. Nov. 1951.
Data on R. rattus (4 forms), R. exulans, and R. annandalei in Malaya. Subjects treated are: ecology, sex ratios, weights at different ages, correlation of reproductive condition with weight, pregnancy rate, litter size, intra-uterine mortality, actual rate of reproduction, correlation of reproductive rates with exposure to predation. Forms with low reproductive rates appeared to be those less exposed to predation. One formof R. rattus has an unusually low embryo number, apparently as an effect of malnutrition (population overcrowded, heavily parasitized). Another form of R. rattus has low incidence of pregnancy, perhaps because of low population density.

Hollander, W. F. and L. C. Strong. INTRA-UTERINE MORTALITY AND PLACENTAL FUSIONS IN THE MOUSE. Jour. Exper. Zool. 115(1): 131-150, illus. Oct. 1950. [From Journal of Mammalogy 33(1).]

Li, Huan-Ying, and David E. Davis. THE PREVALENCE OF CARRIERS OF LEPTOSPIRA AND SALMONELLA IN NORWAY RATS OF BALTIMORE. American Journal of Hygiene 56(1): 90-100. July 1952.
The incidence of these organisms in many rats from various habitats was determined. Incidence varied from place to place. Leptospira was commonest in large rats; it was not found in 20 litters from mothers having it. It is concluded that, "...although Leptospira and Salmonella infections may be highly prevalent among natural rat populations, these diseases do not necessarily play a significant role in limiting population size."

Richter, Curt P. DOMESTICATION OF THE NORWAY RAT AND ITS IMPLICATIONS FOR THE PROBLEM OF STRESS. Proc. Assoc. Research Nervous and Mental Disease 29: 19-47, illus. 1950. [From Journal of Mammalogy 33(1).]

Richter, Curt P. TASTE AND SOLUBILITY OF TOXIC COMPOUNDS IN POISONING OF RATS AND MAN. Jour. Comp. and Physiol. Psychol. 43(5): 358-374, illus. Oct. 1950. [From Journal of Mammalogy 33(1).]

Schein, Martin W. THE RELATION OF SEX RATIO TO PHYSIOLOGICAL AGE IN THE WILD BROWN RAT. American Naturalist 84(819): 489-496. Nov.-Dec. 1950. [From Journal of Mammalogy 33(1).]

U. S. Public Health Service. INSECTICIDES AND RODENTICIDES--1952 RECOMMENDATIONS FOR USE. Public Health Reports 67(5): 455-458. May 1952.
Recommendations for use of DDT and other insecticides in mosquito, fly, and flea control are given, with fish protection considered in mosquito control. Warfarin has proved successful in rodent control and suggestions are made for its best use. Limitations of ANTU and 1080 are briefly discussed. "In tests at Savannah, corn meal has proved to be the most readily accepted cheap bait." The same bait does not serve equally well under all conditions. Unlike insects, rats do not seem to have developed resistance to poisons.

Young, Howard, John Neess, and John T. Emlen, Jr. HETEROGENEITY OF TRAP RESPONSE IN A POPULATION OF HOUSE MICE. Journal of Wildlife Management 16(2): 169-180, illus. April 1952.
Statistical analysis of captures of live-trapped mice show that recaptures do not conform closely to the Poisson distribution. The authors conclude that use of the Lincoln Index to estimate populations in live-trapping studies is therefore open to serious question.--Lucille F. Stickel.

MAMMALS--SCIURIDS

Allen, John M. GRAY AND FOX SQUIRREL MANAGEMENT IN INDIANA. Indiana Department of Conservation, P.-R. Bulletin no. 1: 1-112, illus. March 1952.
This semi-technical bulletin, based on 3 years of field study, contains much solid, original information and is exceptionally interesting and easy to read. It is a well rounded treatment of squirrel ecology, life history, and management. Topics include: inventories, characteristics, movements, habitat, food habits, population levels, reproduction, hunters and hunting, other decimating factors, and management recommendations. The importance of mast failures and the relative unimportance of hunting to populations are fully substantiated. Indiana is thought to have adequate seed stock, suitable regulations, and a reasonable take. Squirrels can be aided only by forestry practices that favor food and den trees, or by the artificial provision of food and dens.

Atkeson, Thomas L., and David C. Hulse. CRIPPLING AS A FACTOR IN GRAY SQUIRREL HUNTING. Journal of Wildlife Management 16(2): 230-232. April 1952.
In 7 hunts on the Wheeler Refuge, Alabama, 13,009 gray squirrels were bagged and 1,309 were wounded but not bagged. Rifles caused a little more crippling than shotguns. Many of the wounded recover.

Flyger, Vagn F. A BIBLIOGRAPHY OF THE TREE SQUIRRELS AND OTHER PERTINENT LITERATURE. Pennsylvania Cooperative Wildlife Research Unit, Quarterly Report 13(4): 19-38. April-June 1951.
Wildlife Review ordinarily does not include material from quarterly or progress reports, but this extremely useful and comprehensive bibliography necessitates an exception. It contains about 400 titles, mostly on ecology, natural history, and management. Taxonomic and faunal works are largely omitted.

King, John Arthur. SOCIAL BEHAVIOR, SOCIAL ORGANIZATION, AND POPULATION DYNAMICS IN A BLACK-TAILED PRAIRIEDOG TOWN IN THE BLACK HILLS OF SOUTH DAKOTA. PhD thesis, University of Michigan, 1952. [From long abstract in Dissertation Abstracts 12(2).]
Foods, effect on vegetation, density of burrows, populations and fluctuations, sex ratios, mortality in relation to age, effect of predation (slight), division of town into small groups called coteries, size of coterie and its territory, extent of daily travels by individuals, cooperation within and antagonism between coteries, extension of occupied area by movements of adults. The social unit, the coterie, contains an average of 8.5 individuals and occupies a defended area averaging 0.7 acre, which is also the individual home range. There is little friction within the coterie and some cooperation. "The social behavior of prairiedogs, including the defense of territories, is a mechanism which regulates their local population density."

Morrison-Scott, T. C. S. and A. H. Bishop. THE COAT COLOUR OF THE GREY SQUIRREL (SCIURUS CAROLINENSIS) WITH OTHER NOTES. Proceedings of the Zoological Society of London 121(4): 773-775, illus. Feb. 1952.
Seasonal pelage changes were worked out for a large British series. They are illustrated by 6 colored drawings, and also described. Attempts to diagnose age by means of skull proved inconclusive. Squirrels are best shot as they pause at the base of the tree, or if they pause about 6 feet up. If a squirrel is not shot at either pause, it is helpful to have a dog or companion who will stand on the other side of the tree to prevent the squirrel from staying on the far side of the trunk. If the hunter is alone, squirrels may often be prevented from moving around the tree by a coat laid on the ground.

Tevis, Lloyd, Jr. AUTUMN FOODS OF CHIPMUNKS AND GOLDENMANTLED GROUND SQUIRRELS IN THE NORTHERN SIERRA NEVADA. Journal of Mammalogy 33(2): 198-205, illus. May 1952.
Foods of Eutamias quadrimaculatus, E. townsendi, E. amoenus, and Citellus lateralis in a year when the conifer and shrub seed crop failed. The animals fed largely on subterranean fungi and appeared to do well. E. amoenus ate many harmful caterpillars from desert mahogany. Habitat differences in foods are discussed.

MAMMALS--BEAVER

Anonymous. OUR FIRST BEAVER SEASON. Outdoors in Illinois 18(1): 12-13, illus. Spring 1952.
Illinois had its first open season on beaver in 90 years. Over 300 trappers caught 654 beavers during the 15 day season. Traps smaller than no. 4 were inadequate. A few data on weights and prices are given.

Brakhage, George K., and Frank W. Sampson. RABIES IN BEAVER. Journal of Wildlife Management 16(2): 226. April 1952.
Reports a rabid beaver from near Columbia, Missouri. The beaver attacked a farm dog.

Grasse, James E. BEAVER ECOLOGY AND MANAGEMENT IN THE ROCKIES. Wyoming Wildlife 16(6): 26-34, illus. June 1952.
Reprinted from the January 1951 issue of The Journal of Forestry. The bulk of the paper treats the value of beavers in watershed and wildlife protection. Beaver work in the West generally favors trout. In the Rocky Mountain region the value of beaver work is so great that no open season should be considered. Nuisance beavers on private land can continue to be taken on fur-farm or damage permits as they now are.

MAMMALS--MUSKRAT AND NUTRIA

Errington, Paul L. THE MATHEMATICAL MUSKRAT. Iowa Conservationist 11(6): 41, 47, illus. June 1952.
A popular exposition, with many examples, of carrying capacity and the numerous factors that interact to keep populations adjusted to it. If catastrophe strikes, breeding increases; if there is a surplus, something is bound to reduce it, even if it has to be intraspecific killing. Drought and disease, however, may keep a population low for years.

Harris, Van T. MUSKRATS ON TIDAL MARSHES OF DORCHESTER COUNTY. Maryland Board of Natural Resources, Department of Research and Education, Publication no. 91: 1-36, illus. Undated. [1952.]
A semitechnical report on the results of 2 years of study. The author presents data on changes in the marsh, changes in muskrat numbers through the years, reproduction, sex ratios, weights, predation by raccoons and foxes, and ways in which habits of the local muskrats differ from those of muskrats studied elsewhere. There is an average of 4 to 5 young per litter and apparently 2 litters per year. Survival of young seems to be poor, for young make up only about half of the catch and the population is low. Raccoons disturb about half the houses, chiefly occupied houses. Muskrat remains were found in 19.2% of 150 raccoon stomachs and in 3% of 551 raccoon droppings. Signs indicate that much of the damage is done by a few raccoons that enter the marsh periodically and visit many houses. Red foxes prey more heavily on muskrats. Muskrat remains were found in 59% of 17 fox stomachs and in 56% of 132 droppings. Effect of predation could not be evaluated in the absence of population figures, but it is believed that predation, coupled with frequent disturbance of houses by predators, may lower breeding success. Other factors that may be affecting muskrats adversely are greater open areas in the marsh, greater tidal action, and effects of past overpopulations. No evidence of disease was found.

Klemm, M. VERBREITUNG UND BEKAMPFUNG DER BISAMRATTE (ONDATRA ZIBETHICA L.) IN DEUTSCHLAND IN DEN JAHREN 1946-1949. Nachrichtenbl. Deutsch. Pflanzenschutzdienst (Berlin) 3(11-12): 201-205. 1949. [From Journal of Mammalogy 33(1).]

Shanks, Charles E., and George C. Arthur. MUSKRAT MOVEMENTS AND POPULATION DYNAMICS IN MISSOURI FARM PONDS AND STREAMS. Journal of Wildlife Management 16(2): 138-147, illus. April 1952.
See Wildlife Review no. 67, p. 17.

MAMMALS--MUSKRAT AND NUTRIA--Continued

Sweatman, G. K. ENDOPARASITES OF MUSKRATS IN THE VICINITY OF HAMILTON, ONTARIO. Journal of Mammalogy 33(2): 248-250. May 1952.
Report on examination of 108 muskrats. The worms and their incidences are listed and discussed. No seriously harmful effects were observed.

MAMMALS--FURBEARERS--GENERAL

Anonymous. BEAVER AND OTTER TAKE, SPRING 1952. New York State Conservationist 6(6): 31. June-July 1952.
Number of pelts and number of trappers per county, N. Y. State totals, 6,724 beavers and 133 otters. An accompanying note (p. 32) states that the beaver crippling loss is high because of a state law limiting jaw-length of traps to 6 inches or less, and because drowning sets are too seldom made. It is estimated that as many beavers are crippled as are caught.

Anonymous. 1951-52 TRAPPING SEASON. Oregon State Game Commission Bulletin 7(7): 7, illus. July 1952.
Oregon catch, broken down by species and counties. Average prices are given.

Cofer, Henry P. DELAWARE FURBEARERS. [Cover title: Muskrats and Furbearers.] Delaware Game and Fish Commission. 1-4 p. (text), 1-6 p. (bibliography). 1950.
Over 4 pages of this leaflet consist of a partial bibliography of muskrat management. In other sections, the biology and importance of the muskrat in Delaware are sketched, and brief accounts are given of the habits of skunk and raccoon. Notes on other species state that the mink is considered extinct in the state; that a few otter are caught each year; and that beaver have been successfully planted in 2 counties.

Llewellyn, Leonard M. and Francis M. Uhler. THE FOODS OF FUR ANIMALS OF THE PATUXENT RESEARCH REFUGE, MARYLAND. American Midland Naturalist 48(1): 193-203, illus. July 1952.
Authors' summary: "Approximately 300 digestive tracts of fur animals obtained mostly during the winter trapping season and 560 scats from animals live-trapped.....were analyzed. The resulting data are summarized and a brief description of the area and important habitat types is given. The animals studied include the raccoon, red fox, gray fox, mink, New York weasel, skunk, opossum, and house cat." Notes are also given on native and introduced foods eaten locally by muskrats. Graphs show the seasonal foods of most animals mentioned.

Thomas, Earl M. THE FUR-BEARING MAMMALS OF WYOMING. 2nd installment. Wyoming Wildlife 16(4): 22-32, illus. April 1952.
This installment opens with a discussion of the cash value of the state's fur crop and the legal status of furbearers. Some of them (including muskrats, badgers, weasels, skunks, and raccoons) have no legal protection. Harvests could be greatly increased with proper regulation. In the absence of any protection, muskrat numbers are declining rapidly. Beaver can be taken only on permit and when doing damage, but even so the take varies greatly with the fur price. A list is given of Wyoming fur-bearers, complete to subspecies. The bulk of the paper is devoted to a compiled account of the raccoon: habits and behavior, foods and feeding, breeding, and value.

MAMMALS--BEARS

Annabel, Russell. NEEDED: A NEW DEAL FOR ALASKA'S BEARS. Sports Afield 127(6): 40-41, 93-98, illus. June 1952.
The bears of Alaska are being slaughtered in huge numbers, mostly illegally, often with the slightest pretext of legality. Some persons deliberately wound them with small caliber guns, making them extremely dangerous to everyone in the area. Construction workers from the U. S. are the worst offenders, but

MAMMALS--BEARS--Continued

military personnel, tenderfeet, and residents all take part. Almost the bears' only defenders are guides and others who profit from the bears. The author believes that the populations cannot withstand this wholesale killing, and that bears are already scarcer.

Matson, J. R. LITTER SIZE IN THE BLACK BEAR. Journal of Mammalogy 33(2): 246-247. May 1952.
Examples of this bear having litters of 5. The average number born may be higher than usually thought, but infant mortality cuts the number by the time of spring activity.

Murie, Olaus J. THE GREAT BROWN BEAR. Frontiers 15(4): 114-116. April 1951. [From Journal of Mammalogy 33(1).]

MAMMALS--RACCOON AND RINGTAIL

Sanderson, Glen C. THE STATUS OF THE RACCOON IN IOWA FOR THE PAST TWENTY YEARS AS REVEALED BY FUR REPORTS. Proceedings of the Iowa Academy of Science 58: 527-531, graph. 1951.
Iowa fur-buyer reports are complete since 1930 and hunting and trapping regulations have not changed in that time. The curve of pelts taken began to rise sharply in 1943, leveled off after the 1946-47 season, but continued high. The recent irruption cannot be explained by low pelt prices or by lessened pressure during the war. In fact, the irruption began in spite of unusually high fur prices, rose despite the drop in fur price, and continued to rise through the war years. After the war, when the pressure presumably increased, the take leveled off instead of rising.

MAMMALS--MUSTELIDS

Chandler, Asa C. TWO NEW SPECIES OF OOCHORISTICA FROM MINNESOTA SKUNKS. American Midland Naturalist 48(1): 69-73, illus. July 1952.
New tapeworms from Spilogale and Mephitis.

Richmond, Neil D., and Robert D. McDowell. THE LEAST WEASEL (MUSTELA RIXOSA) IN PENNSYLVANIA. Journal of Mammalogy 33(2): 251-253, illus. May 1952.
Range and abundance of this weasel in the state (map). Numbers of all kinds of weasels in the state have declined.

Thomas, Earl M. THE FUR-BEARING MAMMALS OF WYOMING. Wyoming Wildlife 16(6): 12-17, illus. June 1952.
This 4th installment is devoted to the marten. A good review of life history and habits is given. The species is expected to persist in Wyoming.

Vos, Antoon de, and Stanley E. Guenther. PRELIMINARY LIVE-TRAPPING STUDIES OF MARTEN. Journal of Wildlife Management 16(2): 207-214, illus. April 1952.
Report of work in Ontario and Washington on movements, preferred habitats, and sex ratio. Martens are easily live trapped, have a home range or foraging circuit, and appear to have some homing tendency. Much marten activity is near streams and lakes. Cedar, fir, and hemlock areas are preferred to pine.

MAMMALS--DOGS, WOLVES, FOXES

Richmond, Neil D. FLUCTUATIONS IN GRAY FOX POPULATION IN PENNSYLVANIA AND THEIR RELATIONSHIP TO PRECIPITATION. Journal of Wildlife Management 16(2): 198-206, illus. April 1952.
Numbers of gray foxes bountied 1915-1950 varied directly with the number of days of precipitation. Marked increases occurred in the years having the first 3 months wetter and warmer than average. The weather varied at roughly 10 year intervals. The number of foxes bountied during the last war actually increased, despite supposedly lighter control pressure. The bounty does not seem to be effective. Climatic factors or their effects govern the population.

MAMMALS--CATS

Pocock, R. I. CATALOGUE OF THE GENUS FELIS. British Museum (Natural History). vii + 190 p., illus. 1951. 30s. [From Nature 169(4305).]
This volume dealing with the genera Felis and Otocolobus is all of the proposed monograph of the Felidae that was far enough advanced for publication at the time of the author's death. Seven species and 53 subspecies of Felis are recognised. The domestic cat, F. catus, is considered a composite form of which the European representatives, at least, owe their origin to the crossing of 2 wild species, F. silvestris and F. lybica. This is a subject to which Pocock devoted much study, and which he discusses in detail, describing feral specimens from all parts of the world. "The catalogue starts with a discussion of the characters and subdivisions of the family Felidae and then deals with each species and subspecies, going fully into the geographical distribution, diagnosis, and skin and skull characters, with numerous tables of measurements and some figures of skulls."

Pollack, E. M. and William G. Sheldon. THE BOBCAT IN MASSACHUSETTS, INCLUDING ANALYSES OF FOOD HABITS OF BOBCATS FROM OTHER NORTHEASTERN STATES, PRINCIPALLY NEW HAMPSHIRE. Massachusetts Division of Fisheries and Game. 1-24, illus. Sept. 1951.
Average and maximum weights, habitat, life history, food habits, hunting habits and home range, senses, population and distribution, bounties paid (Massachusetts), hunting bobcats. The paper is based on original research, especially on food habits. The authors condemn bounties on bobcats as being unnecessary, ineffective, and expensive. "It is to the interest of the Commonwealth to encourage laws and management policies protecting the bobcat as much as other game species."

MAMMALS--BIG GAME--GENERAL

Anonymous. UTAH'S 1951 GAME HUNT GREATEST IN STATE'S HISTORY. Utah Fish and Game Bulletin 9(3): 1-2. March 1952.
Hunting statistics for deer and elk. 94,613 deer (2/3 of them bucks) were killed, with hunter success 83.6%. Elk hunters' success was 83%. More than 12,000 elk have been harvested since 1925. An explanation is given of how hunting statistics are gathered and checked. Report cards are accurate to about 2%.

Buechner, Helmut K. WINTER-RANGE UTILIZATION BY ELK AND MULE DEER IN SOUTHEASTERN WASHINGTON. Journal of Range Management 5(2): 76-80. March 1952.
Comparison of range conditions in elk and mule deer ranges on the Wooten Game Range, where livestock are excluded. "In the spring, the difference between the areas in remaining forage was highly significant as a result of much higher utilization by elk on one area. At a population density of 41 elk and 14 deer per square mile, or 4 acres per elk-month and 11 acres per deer-month, 78 per cent of bluebunch wheatgrass was removed, whereas only 49 per cent was removed at a population density of 16 elk and 21 deer per square mile, or 9 acres per elk-month and 7 acres per deer-month...Recovery of the grassland vegetation was seriously retarded where elk were most numerous. To maintain the vegetation in vigorous condition, it is recommended that winter use not exceed 50 percent of bluebunch wheatgrass."

Hunter, Gilbert N. RESUME & SUMMARY, 1951 DEER, ELK, AND BEAR SEASON. Colorado Game and Fish Department. 1-9 p. + 14 pages of tables. 1952.
Discusses license sales, seasons (regular and special), weather, sources of data, and then analyzes the kill on various bases. Tables give deer and elk kill by counties, 1944-50; kill of bear, elk, and deer, 1951, by counties, management areas, sex, and age; and resident and non-resident hunting pressure by counties.

Tigerman, Merle H. OBSERVATIONS OF INFILTRATION RATES AND SEDIMENT PRODUCTION ON BIG GAME RANGES. Journal of Wildlife Management 16(2): 224-225. April 1952.
Soil of areas heavily used by deer or elk had less infiltration capacity

MAMMALS--BIG GAME--GENERAL--Continued

and more sediment production than that of protected areas. Proper herd control benefits watershed as well as range condition.

MAMMALS--HOOFED (Except deer)

Anonymous. OREGON'S PRONGHORN ANTELOPE. Oregon State Game Commission. 10 unnumbered p., illus. No date.

This leaflet, intended mainly for sportsmen, reviews the habits, history, and distribution of pronghorn in the state, explains reasons for the hunting regulations, and tells how to care for the meat and head. Antelope are not numerous enough in the state to fill the available range, so only the shooting of bucks is allowed. Water is being developed on the range, predator control is practiced, and transplanting is planned.

Anonymous. WANT A BUFFALOBURGER? Farm Quarterly 7(2): 50-51, 88-92, illus. Summer 1952.

A discussion of private rearing of bison for profit. Several farmers or ranchers are making a good business of it, for the price of bison meat is not under controls. Bison are not as easily handled or bred as are cattle; the difficulties and some of the solutions are outlined, with feed and space requirements given especial attention. Crosses of bison and cattle have not been entirely successful. The hybrids (cattalos) are generally sterile, only males with as little as 1/32 bison blood being completely fertile. There is a high mortality rate among cows and calves. A cow bred to a bison bull has an excessive amount of amnionic fluid, and delivery is difficult. Sources of bison for breeding are listed.

Arrington, O. N. BUFFALO HERD INFORMATION. Arizona Game and Fish Commission, Arizona Game Surveys, Project Job Completion Reports, 1951. Project 53 R 1 - WP 2 - J 8. 1-9 p. Jan. 9, 1952.

Detailed histories of the 3 Arizona herds, and accounts of regulated buffalo shoots in the state. The Arizona buffalo population is now 528 plus about 115 calves.

Atwood, B. H. MOOSE VS THE "IRON HORSE." Outdoor America 17(2): 10-11, illus. March-April 1952.

In winter, moose in Alaska tend to gravitate to railroad right-of-ways because they are relatively open. It is estimated that up to 200 moose are killed each year by trains. Frequently they charge the trains; examples of this and other aggressive behavior are given. Formerly, moose trying to cross railroad trestles often got their legs caught between the ties and had to be helped out. Now the spaces between ties are filled so that moose can cross safely.

Banfield, Alexander William Francis. THE STATUS, ECOLOGY, AND UTILIZATION OF THE CONTINENTAL BARREN-GROUND CARIBOU (RANGIFER ARCTICUS ARCTICUS). PhD thesis, University of Michigan, 1951. [From long abstract in Dissertation Abstracts 12(2).]

Past and present status, extent of summer and winter ranges, rate of reproduction, foods, parasites and disease, wolf predation, social structure of herds, migration, human harvest. The present population is about 670,000; there has been a 62% decrease in the last 50 years owing to heavier shooting by natives. Man has little influence on the habitat. Management must reduce the kill and reduce the wastage. The estimated present density is roughly 2.2 animals per square mile of occupied range. Average annual increment is approximately 21.6% of the herds.

Burback, H. J. BUFFALO ON THE PUBLIC DOMAIN. Our Pub. Lands 1: 14. Oct. 1951. [From Journal of Range Management 5(2).]

MAMMALS--HOOFED (Except deer)--Continued

Clarke, C. H. D. THE SACRED COW. Northern Sportsman 7(6): 10-12, illus. June 1952.
Citing the Swedish work of Folke Skuncke and yet unpublished Canadian work by R. L. Peterson, the author maintains that moose populations are unbalanced and relatively unproductive when only bulls are hunted. Cows should be harvested as heavily as bulls. The period of heat is short, and if there are not as many bulls as cows, some cows go calfless. Swedish herds thrive under cow shooting.

Collins, Henry H., Jr. THE UNVANQUISHED BUFFALO. Blue Heron Press, Box 236, Bronxville 8, N. Y. 15 p., illus. 1952. 25¢. [From Outdoor News Bulletin 6(16).]
"This is, in many ways, the story of the American wildlife conservation movement embodied in one species...Although this is a short publication, the work is beautifully and authoritatively written." It is illustrated with 2 color plates, 4 halftones, and 3 drawings. "In addition to this booklet, the publisher also distributes the 1951 CENSUS OF AMERICAN BISON, a mimeographed publication also written by Dr. Collins, giving a complete record of the distribution and numbers of wild and captive American buffalo throughout the world. Together these publications provide a graphic picture of the history and present status of a unique American mammal. The price of the 'Census' is $1.00."

Hall, John M. ANNUAL SPRING AND FALL ELK SURVEYS. Arizona Game and Fish Commission, Arizona Game Surveys, Project Job Completion Reports, 1951. Project 53 R 1 - WP 3 - J 2. 1-7 p. June 12, 1951.
Reports surveys in several areas; treats numbers, age and sex ratios, and range conditions.

Hall, John M. ELK HUNT INFORMATION. Arizona Game and Fish Commission, Arizona Game Surveys, Project Job Completion Reports, 1951. Project 53 R 1 - WP 2 - J 2. 1-4 p., illus. Dec. 23, 1951.
1950 hunting statistics and discussion of them. Total kill was 1,484. Recommendations are made for changing regulations to get a larger kill.

Murie, Olaus J. OUR ELK ARE IN TROUBLE. Outdoor America 17(2): 4-7, 23, illus. March-April 1952.
A discussion of the management of elk in the Yellowstone and Grand Teton National Parks region. It may be possible to encourage elk to migrate to winter range on national forest land north of Yellowstone Park, but the main problem is to arrive at suitable harvesting arrangements that will not result in "firing line" shooting or violate national park protective policy. A small herd that summers in the north end of the Teton Mountains, on park land, should be left under natural conditions, without hunting.

Murie, Olaus J. GRAND TETON NATIONAL PARK AND ITS ELK. National Parks Magazine 25(107): 119-120, 149-150, illus. Oct.-Dec. 1951.
The author discusses movements of elk in the region and problems of keeping the herds within proper limits. Elk spend little time in the park itself and shooting there is not necessary. Conflicting interests of various groups are fairly weighed. State and federal administrators seem to be reaching satisfactory solutions. "It should be mentioned too that, in Jackson Hole itself, former opponents of national parks have dropped the thought of further opposition. The Act of Congress settled it, and the people as a whole have settled down to enjoy the beauties of the valley and plan for the future. Can we look upon all these occurrences as a trend?"

Murie, Olaus J. ELK SHOOTING IN GRAND TETON AGAIN. National Parks Magazine 26(110): 118. July-Sept. 1952.
Protests the request of the Wyoming Game and Fish Commission for hunting in an additional area of this national park, and states that in this area there are no critical problems that call for remedial hunting.

MAMMALS--HOOFED (Except deer)--Continued

Russo, John Philip. ARIZONA DESERT BIGHORN SHEEP MANAGEMENT SURVEYS. Arizona Game and Fish Commission, 1951 Project Job Completion Reports. 20 p., illus. 1952.
Three separately paged reports dealing with distribution and numbers in different parts of the state, foods and range conditions, water resources and recommendations for their development, competition with feral stock, age and sex ratios, poaching, and predation. An instance of coyotes killing 13 bighorns at a time is reported. 1080 stations are scattered over the range to reduce such losses. Bighorns now occur in practically all of the available mountain ranges and transplanting is not needed. Limited hunting of males is suggested for the future.

Scheffer, Victor B. THE RISE AND FALL OF A REINDEER HERD. Scientific Monthly 73(6): 356-362, illus. Dec. 1951.
Reindeer were introduced to the Pribilof islands of St. George and St. Paul in the fall of 1911. The St. George herd reached a population of 222 by 1922 and soon subsided to a small stable population of 40 to 60 for unknown reasons. The St. Paul herd grew steadily until the early 1930's, when it erupted, reaching a total of over 2000 in 1938. It then crashed, and in 1950 there were but 8 survivors. The crash is attributed to depletion of the lichen stands necessary for winter nutrition and to a series of severe winters with accompanying crusting of snow. The herd had been at least 3 times the carrying capacity of the winter range. Figures are given on reindeer numbers and weather conditions through the years.

Wingfield, D. W. GRAZING PERMITS AND ELK. Ariz. Farmer 30: 23,27. Nov. 10, 1951. [From Journal of Range Management 5(2).]

MAMMALS--DEER

Anonymous. THE 1951 DEER HARVEST WAS HIGH--129,475. Wisconsin Conservation Bulletin 17(5): 22-23. May 1952.
Wisconsin. Discussion; take by counties.

Cosper, P. M. and Denis J. Illige. 1950 NORTHERN ARIZONA DEER SEASON, ROCKY MOUNTAIN MULE DEER. Arizona Game and Fish Commission, Arizona Game Surveys, Project Job Completion Reports, 1951. Project 53 R 1 - WP 2 - J 3. 1-15 p., illus. Jan. 12, 1952.
Hunting statistics and discussion of them. The season was one of the most successful on record, with a state-wide kill of about 11,284. A limited area was open for "any deer" hunting in order to prevent a new Kaibab outbreak. Hunt records (1939-50) for Kaibab South show decline in numbers of mature bucks and drop in hunter success despite trend toward increase in total bagged. The low fawn crop of Kaibab South is caused in part by failure of most yearling females to breed.

Diem, Kenneth Lee. A MANAGEMENT STUDY OF THE UTAH - IDAHO INTERSTATE DEER HERD WITH SPECIAL REFERENCE TO THE SUBLETT, BLACK PINE, AND EAST RAFT RIVER MOUNTAIN UNIT. M. S., Utah State Agricultural College, June 1952.
This migratory herd is too large for its winter range and hunting pressure is too light. Range and watershed damage is occurring. 757 deer were harvested in 1950; 27% were does, 53% were bucks, and 16% were fawns. There are about 4900 deer in the herd. Censuses were made best from "track counts" along a dirt road between winter and summer range.

Gunvalson, Vernon E., Arnold B. Erickson and Donald W. Burcalow. HUNTING SEASON STATISTICS AS AN INDEX TO RANGE CONDITIONS AND DEER POPULATION FLUCTUATIONS IN MINNESOTA. Journal of Wildlife Management 16(2): 121-131, illus. April 1952.
Any-deer hunting statistics collected from several areas in various years are analyzed as to the effect of overpopulation and severe winters on sex ratios and reproduction. It appears that, "...accurate kill data of adult-

MAMMALS--DEER--Continued

fawn take percentages and fawn/doe figures plus age-class determinations may be used as indicators of population fluctuations and range conditions."

Hall, John M. ANNUAL ROCKY MOUNTAIN MULE DEER SURVEY. Arizona Game and Fish Commission, Arizona Game Surveys, Project Job Completion Reports, 1951. Project 53 R 1 - WP 3 - J 3. 1-7 p., illus. Jan. 4, 1952.
Reports numbers, age ratios, sex ratios, and range conditions encountered along survey lines in various areas. Cars are considered much superior to horses for deer survey work.

Harris, Dave. SUPPLEMENTAL DEER FEEDING IN THE BLACK HILLS. South Dakota Conservation Digest 19(6): 6-7, 16, illus. June 1952.
In the 3 unusually hard winters of the past 7 years deer have been kept from starving by use of a special deer food, contents of which are not stated. Different feeding grounds are used each day to lessen bad effects of concentration. A starving herd shows physical improvement within a week. Less than a 3% loss occurred on or near feed grounds. Deer have been fed for as long as 100 days.

Julander, O. FORAGE HABITS OF MULE DEER DURING THE LATE FALL, AS MEASURED BY STOMACH CONTENT ANALYSES. U. S. Forest Service, Intermountain Forest and Range Experiment Station, Ogden, Utah. Research Note no. 2. 5 p. March 1952. [From Journal of Forestry 50(7).]

Knipe, Theodore. 1950 SOUTHERN ARIZONA DEER SEASON, ZONES 2 AND 3, WHITE-TAILED AND DESERT MULE DEER. Arizona Game and Fish Commission, Arizona Game Surveys, Project Job Completion Reports, 1951. Project 53 R 1 - WP 2 - J 4 & 5. 1-25 p., illus. Oct. 15, 1951.
Gives very detailed hunting statistics for 1941-50, and for the 1950 Tucson Mountain special hunt.

Longhurst, William M., A. Starker Leopold, and Raymond F. Dasmann. A SURVEY OF CALIFORNIA DEER HERDS, THEIR RANGES AND MANAGEMENT PROBLEMS. California Department of Fish and Game, Game Bulletin no. 6: 1-136, illus. 1952.
This comprehensive report on all aspects of California deer problems is a detailed analysis of the situation and a definitive guide to management of herds. It traces at length the history of deer in the state; discusses factors affecting deer; analyzes populations, migrations and range conditions in all areas; considers the dynamics of deer populations; thoroughly weighs management problems; and has an appendix dealing with parasites and diseases of deer in the state. California has at least 1,126,000 deer. The net annual crop is about 250,000, but only about 75,000 are bagged. To reduce waste of deer, range damage, and crop damage, regulations should permit a kill 2 or 3 times as large. Some does should be killed, as well as more bucks, under a program of careful, local regulation, to achieve proper distribution of the kill. A plan for units and subunits to be used in managing the herds is presented. Although herd regulation is the only management measure generally practical, some habitat improvement is recommended. Further predator control is not recommended; the deer are already overprotected. "...an actual increase in the number of predators should be considered a desirable objective of management...The present program of predator control being carried out in California cannot be considered of any material benefit to the deer population."

McGinnes, Burd S. THE WHITE-TAILED DEER IN DELAWARE. [Cover title: Deer Management.] Delaware Game and Fish Commission. 1-12 p. Dec. 1950.
A popular review of deer life history and deer problems as seen in other states. The Delaware herd is increasing and expanding its range. The state anticipates opening the season soon enough to minimize range and crop damage. It is believed that in Delaware the population should not be allowed to exceed one deer per 25 or 30 acres of deer range. The handling of deer in Maine is cited as a good example to follow: Maine has never had a buck law, yet the herd--and the average size of individuals--is increasing.

MAMMALS--DEER--Continued

Seamans, Roger A. ELECTRIC FENCES FOR THE CONTROL OF DEER DAMAGE. Vermont Fish and Game Service, Montpelier. State Bulletin, Pittman-Robertson Series no. 16: 1-77, illus. Feb. 1951.
This detailed report is based on experience with 225 operating electric fences. Full instructions are given for installing and maintaining the type of fence found best (an outrigger arrangement), and large photographs show many of the procedures.

Severinghaus, C. W., I. H. Bartlett, and personnel of PR-Project 25-R. WEST VIRGINIA'S DEER PROBLEM. Conservation Commission of West Virginia. 1-31 p., illus. 1951.
Deer experts vigorously present many facts, figures, and examples of the need for herd control and the benefits the herd itself derives from it. Data from various states, especially New York and Michigan, are used. West Virginia wanted to get after the overpopulation problem before it was acute, and has since done so with an any-deer season.

Smith, Justin G. FOOD HABITS OF MULE DEER IN UTAH. Journal of Wildlife Management 16(2): 148-155. April 1952.
Discusses winter, spring, and summer foods on the basis of range utilization studies. Some competition with live stock was found; grass constituted about 90% of the diet in the spring.

MAMMALS--ARMADILLO

Neill, Wilfred T. THE SPREAD OF THE ARMADILLO IN FLORIDA. Ecology 33(2): 282-284, map. April 1952.
Traces the spread and provides new records. "Evidently the range of the armadillo now blankets Florida, with the exception of the swampy southwestern portion of the peninsula, and the possible exception of the western Panhandle. This remarkable spread has taken place certainly in the last thirty years, and probably in the last twenty." The armadillo has proven highly undesirable. Its burrowing obstructs ditches in orange groves. Thousands of dollars worth of damage may be done in nursery beds in a single night. Flower and vegetable gardens may be uprooted.

MAMMALS--MARINE

Bartholomew, George A., Jr., and Carl L. Hubbs. WINTER POPULATION OF PINNIPEDS ABOUT GUADALUPE, SAN BENITO, AND CEDROS ISLANDS, BAJA CALIFORNIA. Journal of Mammalogy 33(2): 160-171, illus. May 1952.
Sea lion, Guadalupe fur seal, and elephant seal. No Guadalupe fur seals were seen and the species may be extinct. The elephant seal is thriving.

Clarke, Robert. ELECTRIC WHALING. Nature 169(4308): 859-860. May 24, 1952.
Discusses the need for and development of a harpoon that electrocutes whales. The instrument has been brought to a practical level and its general adoption depends on the verdict of the whalers.

Fisher, Harold Dean. THE STATUS OF THE HARBOUR SEAL IN BRITISH COLUMBIA, WITH PARTICULAR REFERENCE TO THE SKEENA RIVER. Ottawa, Canada. Fisheries Research Board, Bulletin 93. 58 p., illus. 1952.

Scheffer, Victor B. OUTLINE FOR ECOLOGICAL LIFE HISTORY STUDIES OF MARINE MAMMALS. Ecology 33(2): 287-296. April 1952.
Provides brief sketch of physiological adaptations, suggests study programs and methods for their pursuit, and gives selected bibliography of 140 titles.

BIRDS--GENERAL

Allen, Arthur A. STALKING BIRDS WITH COLOR CAMERA. Edited by G. Grosvenor. National Geographic Society. 328 p., illus. 1951. $7.50. [From review by S. C. Ball in American Scientist 40(3).]
Although 266 species of birds are illustrated by 331 color photographs, this is more than a picture book. "In twelve chapters the evolution of the author's methods in photographing his photogenic subjects from a blind at close range unfolds instructively and pleasurably.....these illustrations reveal splendidly motions unappreciable by the naked eye and unattained by photography of even the recent past. Feather definition in most of the pictures is superb and well repays careful study by anyone interested, for example, in the functioning mechanism of flight." There is one chapter by Edgerton and others on high-speed flash photography. "The subjects, of course, are hummingbirds of several species. The action of wings, tails, legs, and beak, as well as balance and bodily posture during performance of daily maneuvers, is analytically displayed. This is a book of unusual interest and beauty."

Allen, Elsa Guerdrum. THE HISTORY OF AMERICAN ORNITHOLOGY BEFORE AUDUBON. Transactions of the American Philosophical Society 41(3): 387-591. 1951. $2.00. [From review by A. W. Schorger in Bird-Banding 23(2).]
This thorough and comprehensive work covers the period up to 1814 and has a bibliography of nearly 800 titles.

A. O. U. Committee. TWENTY-SEVENTH SUPPLEMENT TO THE AMERICAN ORNITHOLOGISTS' UNION CHECK-LIST OF NORTH AMERICAN BIRDS. Auk 69(3): 308-312. July 1952.
Numerous additions and changes are accepted. Some are in the genera Olor, Branta, Anas, Dendragapus, and Lagopus.

Brooks, Maurice. THE ALLEGHENY MOUNTAINS AS A BARRIER TO BIRD MOVEMENT. Auk 69(2): 192-198. April 1952.
These mountains are an incomplete barrier, but they separate a number of races and interfere with the spread of several species. Recent distributional changes in respect to the mountains are discussed.

Cohen, Edwin, and Bruce Campbell. NESTBOXES. British Trust for Ornithology, Field Guide no. 3. 32 p., illus. 1952. 2s. 6d. [From review by E. A. Mason in Bulletin of the Massachusetts Audubon Society 36(6).]
This account of some British bird boxes is unique in stressing designs that make it easy to study or band the birds. An interesting sidelight of Mason's review is that British woodlands are kept so free of dead and unhealthy trees that boxes must be provided for hole-nesting woodland species.

Davis, David E. DEFINITIONS FOR THE ANALYSIS OF SURVIVAL OF NESTLINGS. Auk 69(3): 316-320. July 1952.
"Considerable confusion exists in ornithological literature about the methods of calculating survival of young birds...This paper attempts to clarify the definitions and gives some examples of their use." Various probabilities necessary for survival calculations are defined and statistical methods for handling the data are suggested.

Griswold, John A. EXPERIMENTS IN ARTIFICIAL INCUBATION. Modern Game Breeding and Hunting Club News 22(4): 5 p., unnumbered. April 1952.
Concrete information on incubation of eggs of many kinds of native and exotic upland game birds and waterfowl.

Hess, Gertrud. THE BIRD: ITS LIFE AND STRUCTURE. Greenberg, 201 E. 57th St., N. Y. 22. ix + 244 p., illus. 1951. $4.00. [From Outdoor News Bulletin 6(14).]
"...this volume covers basic bird behavior patterns, ecology, specialization, structure and similar broad tropics...although written primarily about European species, its text applies to birds of North America as well as to the rest of the World...Dr. Hess is a noted Swiss ornithologist...she

BIRDS--GENERAL--Continued

and her translator have produced a book that will be read easily and with great interest by all who are interested in birds, either professionally or as amateurs. The book begins with a discussion of the phenomenon of migration, contains a substantial section on reproduction, including nest building and the care of young, and a well-written and lengthy chapter on the structure and functions of the bird's body...Dr. Hess explains clearly how birds of various species fly, how they feed, and how they sing. The volume is filled with diagramatic line drawings which supplement the text."

Inoruye, Motonori. AN EXAMINATION OF THE FOOD HABITS OF BIRDS AS VIEWED FROM THE CONTROL OF MAY BEETLES. Tori 13(60): 9-21, 60. 1950. [From Auk 69(2).]
"Tabulated results (page 60) for many species. In Japanese with English summary. Birds do exert a suppressing effect on the insects in this region."

Stevens, O. A. BIRD BANDING AND ITS EDUCATIONAL VALUES. Scientific Monthly 74(3): 180-183. March 1952.
Scientific values of this work, with examples.

Stresemann, Erwin. THE HISTORY OF ORNITHOLOGY FROM ARISTOTLE TO THE PRESENT TIME (Die Entwicklung der Ornithologie von Aristoteles bis zur Gegenwart). F. W. Peters, Kurfürstendamm 54, Berlin W 54. xv + 431 p. 1951. [From review by Herbert Friedmann in Bird-Banding 23(2).]
An important, authoritative treatment on a world basis. Many branches of ornithology are considered. Friedmann's review gives a good picture of the book and its contents.

BIRDS--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Bailey, Robert E. THE INCUBATION PATCH OF PASSERINE BIRDS. Condor 54(3): 121-136, illus. May-June 1952.
Describes macroscopic and microscopic anatomy of the patches, traces developmental stages, and reports experiments with hormones. Over 125 specimens from 12 families were studied.

Collias, N. E. THE DEVELOPMENT OF SOCIAL BEHAVIOR IN BIRDS. Auk 69(2): 127-159, illus. April 1952.
Traces changes in social behavior of growing birds and discusses the physiological and other factors that influence the changes. Many interesting examples are given.

Davis, David E. SOCIAL BEHAVIOR AND REPRODUCTION. Auk 69(2): 171-182. April 1952.
Considers the effect of avian social behavior on the reproductive success of species, with particular attention to the effects of courtship, territorial, and heirarchial behaviors.

Emlen, John T., Jr. FLOCKING BEHAVIOR IN BIRDS. Auk 69(2): 160-171, illus. April 1952.
"My objective has been to develop a theoretical basis for interpreting flocking behavior and the various factors, both internal and external, which affect it. For this I have proposed that the form and density characteristics of bird flocks are determined by the interplay of positive and negative forces associated with gregariousness on the one hand and intolerance and independence on the other."

Marshall, A. J. THE INTERSTITIAL CYCLE IN RELATION TO AUTUMN AND WINTER SEXUAL BEHAVIOR IN BIRDS. Proceedings of the Zoological Society of London 121(4): 727-740, illus. Feb. 1952.
Relates seasonal sexual activity to physiological, anatomical, and weather changes. Importance of length of day alone is questioned.

BIRDS--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION--Continued

Mildenberger, Heinz. MEASUREMENTS OF THE HEIGHT AND SPEED OF MIGRATING BIRDS. (Messungen von Höhe und Geschwindigkeit ziehender Vögel (Columba palumbus, Corvus frugilegus, Grus grus).) Bonner Zoologische Beiträge 1(1): 55-57. [From review by D. S. Farner in Bird-Banding 23(2).]

"Measurements were accomplished with the instruments from flack artillery. On 7 March 1943 at Köln with wind directions E to NE, Wood Pigeons flew at 1200-2400 meters altitude and at 9.5-14.5 meters per second, Cranes at 2100 meters and 12.0 meters per second, and Rooks at 2400 meters and 14.0 meters per second. On 11 March 1943 with winds from WNW to SSW Cranes flew at 750-800 meters and at 8.0-16.0 meters per second; Rooks at 700-1000 meters and 16.0-18.0 meters per second. On 10 March 1943, a flight of Starlings, Sturnus vulgaris Linnaeus, was seen at 500 meters altitude flying at 12.5 meters per second. The greatest speed observed was that of a flock of Rooks calculated to be 19.0 meters per second. There are many other interesting data."

Richdale, L. E. SEXUAL BEHAVIOR IN PENGUINS. University of Kansas Press. xiv + 316 p., illus. 1951. $5.00. [From review by R. A. Paynter, Jr. in Ecology 33(2).]

"In a short review it is impossible to do justice to the wealth of entirely new information found in this book. Without doubt it is one of the classic ornithological studies of the century...A unique feature of the study, aside from the many years it required, is the author's intimate knowledge of each bird. This was achieved by banding every individual with especially made bands which could be read with the aid of a telescope at considerable distances. The idiosyncrasies of each of the 88 males and 96 females, in nearly 300 matings, are thereby fully known. The body of the book consists of 10 chapters which in turn deal with the scope of the study, an analysis of the types of behavior, pair formation, sexual dimorphism, sexual behavior in the winter, the pre-egg stage, unemployed birds, incubation, the chick stage, and molting...The appendices are concerned with accounts of the behavior of individual birds..."

Salt, George William. THE RELATION OF METABOLISM TO CLIMATE AND DISTRIBUTION IN THREE FINCHES OF THE GENUS CARPODACUS. Ecological Monographs 22(2): 121-152, illus. April 1952.

An interesting paper on the effect of physiology, food habits, and habitat preferences in determining ranges of species. Experiments on the metabolism of house, purple, and Cassin finches under varying temperature and humidity are reported. Breeding ranges of these species are mapped.

Wolfson, Albert. DAY LENGTH, MIGRATION, AND BREEDING CYCLES IN BIRDS. Scientific Monthly 74(4): 191-200. April 1952.

Young, Howard. TERRITORIAL BEHAVIOR IN THE EASTERN ROBIN [TURDUS MIGRATORIUS]. Proceedings of the Linnaean Society of New York, nos. 58-62: 1-37, illus. 1951. [From Auk 69(3).]

"A detailed analytical study shows that territoriality in this species is a variable thing--the pattern, when present, varies from the concise, too-definite criteria of Howard, and no line can be drawn between territorial and non-territorial birds. Territoriality is so much a part of the entire complex of behavior that it should not be studied by itself."

BIRDS--MANUALS, FAUNAS, COMMUNITIES

Eggleston, Robert B. and Royster Lyle, Jr. THE BIRDS OF PITTSYLVANIA COUNTY, VIRGINIA. The Raven 23(5-6): 37-54. May-June 1952.

Annotated list. Status of each form indicated.

Eisenmann, Eugene. ANNOTATED LIST OF BIRDS OF BARRO COLORADO ISLAND, PANAMA CANAL ZONE. Smithsonian Miscellaneous Collections 117(5). 62 p. 1952.

BIRDS--MANUALS, FAUNAS, COMMUNITIES--Continued

Harrison, H. H. PENNSYLVANIA BIRD LIFE. 3rd edition, revised and enlarged. Pennsylvania Game Commission. 72 p., illus. 1952. [From Journal of Forestry 50(6).]

Musgrove, Jack. CHECK LIST OF IOWA BIRDS. Iowa Conservationist 11(5), supplement, 4 unnumbered p., illus. May 1952.
Includes all authentically recorded species and subspecies, with indication of status of each.

Snyder, L. L. ONTARIO BIRDS. Clarke, Irwin & Co. Ltd., Toronto. x + 248 p., illus. 1951. $4.50.
This is not a handbook or a monograph on birds of Ontario but a popular natural history designed to answer the public's questions. It begins with brief chapters on structure, adaptations, distribution, and migration, and includes a list of all birds of the province. The bulk of the volume consists of readable natural history information about the families and about all common or important species. Black and white sketches are scattered through the text.

Soper, Dewey J. THE BIRDS OF ELK ISLAND NATIONAL PARK, ALBERTA, CANADA. Canadian Wildlife Service, Wildlife Management Bulletin, series 2, no. 3: 1-62, illus. 1951.
An annotated list of 190 species of birds of a 75 square mile park in Central Alberta. The geography, climate, vegetation, and biotic affinities of the park are described. The park is situated on glacial drift in an area where prairie-parkland and boreal forest merge, with the former predominant.

Stewart, Robert E. and John W. Aldrich. ECOLOGICAL STUDIES OF BREEDING BIRD POPULATIONS IN NORTHERN MAINE. Ecology 33(2): 226-238. April 1952.
Occurrence and populations of birds in various communities. Populations may have been somewhat high because of a spruce budworm outbreak. The abundance of food apparently caused a breakdown of the niche restrictions of certain closely related warblers (Dendroica).

BIRDS--CONTROL, MORTALITY

Anonymous. CONTROL MEASURES ACCOUNT FOR APPROXIMATELY 40,000 MAGPIES. Idaho Wildlife Review 4(5): 13, illus. May-June 1952.
The most effective control was with colored baits of pork rind poisoned with strychnine. Magpies were killed at a cost of about 9¢ per bird. No information is given on other animals killed by the poisoned baits, or on how such kill was avoided.

Przygodda, W. FELDMAUSBEKÄMPFUNG UND VOGELWELT. Vogelwelt 72: 106-111. 1951. [From Auk 69(2).]
"The effect on birds of feeding field mice killed by various poisons."

BIRDS--PARASITES AND DISEASES

Brennan, J. M. TWO NEW SPECIES OF NEOSCHONGASTIA WITH A KEY TO THE SPECIES OF THE WORLD (ACARINA: TROMBICULIDAE). Journ. Parasit. 37(6): 577-582. 1951. [From Auk 69(3).]
"New species from Momotus lessonii in Guatemala and Petrochelidon p. pyrrhonota in Montana. Larvae of all species of the genus are usually found on birds."

Najim, Abbas Taha. LIFE HISTORY OF GIGANTOBILHARZIA HURONENSIS NAJIM, 1950, A DERMATITIS-PRODUCING BIRD BLOOD-FLUKE (TREMATODA-SCHISTOSOMATIDAE). ScD thesis, University of Michigan, 1952. [Long abstract in Dissertation Abstracts 12(2).]
Goldfinch and cardinal are known natural hosts, but other birds are susceptible. The cercariae produce human dermatitis.

BIRDS--PARASITES AND DISEASES--Continued

Stirrett, Geo. M. MALLOPHAGA COLLECTED FROM BIRDS IN ONTARIO. Canadian Entomologist 84(7): 205-207. July 1952.
Host and locality list for 43 species of bird-lice.

BIRDS--WATERFOWL

Bent, Arthur Cleveland. LIFE HISTORIES OF NORTH AMERICAN WILD FOWL (ORDER ANSERES). Dover Publications, Inc., N. Y. Volume 1: ix + 244, illus. Volume 2: 1-316, illus. Reprinted 1951. $8.00 for both volumes.
The Bent volumes on waterfowl, originally published as U. S. National Museum bulletins, have long been out of print and practically unavailable. These welcome photo-offset reproductions are well done; even the plates have suffered but little. Unfortunately, the publisher saw fit to remove all indications of the original publication source, and did not mention the original dates of publication, which were 1923 and 1925.

Chamberlain, Everett B. WATERFOWL MANAGEMENT. Delaware Game and Fish Commission. 1-8 p. Oct. 1950.
A popular article that reviews reasons for the waterfowl shortage, why regulations are necessary and how they are decided upon, and what is being done to increase waterfowl habitat. The value of coastal marshes with artificially controlled water levels is stressed.

Delacour, Jean. PRELIMINARY NOTE ON THE TAXONOMY OF CANADA GEESE, BRANTA CANADENSIS. American Museum Novitates 1537. 10 p. 1951. [From review by D. S. Farner in Bird-Banding 23(2).]
"Drawing heavily on the unpublished materials of the late James Moffitt, the author proposes a taxonomic system for the white-cheeked geese recognizing a single species with 12 subspecies, two of which are previously undescribed."

Fabricius, Eric. THE BEHAVIOR OF YOUNG DUCKS (Zur Ethologie junger Anatiden). Acta Zoologica Fennica 68: 1-175. 1951. [From review by Mrs. M. M. Nice in Bird-Banding 23(2).]
Experiments on imprinting with newly-hatched tufted ducks, shovellers, and eiders. The ducklings imprinted readily and irreversibly, but did not become imprinted on brothers and sisters. The sensitive period for imprinting was strongest in the first 6 hours and practically disappeared in 24 hours. Fear reactions rapidly predominated. The young birds showed instinctive, specific reactions to objects of the environment: young tufted ducks and shovellers were strongly attracted to reeds, whereas young eiders avoided reeds and instead were especially fond of swimming along open rocky shores. There are many other observations on reactions and learning. "There is much discussion of the psychological implications of the experiments with references to the pertinent literature. Very fine work, based on carefully planned, illuminating experiments."

Gullion, Gordon W. SEX AND AGE DETERMINATION IN THE AMERICAN COOT. Journal of Wildlife Management 16(2): 191-197, illus. April 1952.
Vocal differences provide 100% recognition of the sexes; mid-toe length provides accurate sex recognition of 86% of the birds. Leg color is the best age character; it permits use of 3 age classes. The sex ratio is about even. "The age ratio and rate of survival among coots at Gray Lodge Refuge...was believed to be 100:24:10 or 12 for first, second and third-plus year birds."

Gullion, Gordon W. THE DISPLAYS AND CALLS OF THE AMERICAN COOT. Wilson Bulletin 64(2): 83-97, illus. June 1952.
A detailed account of subjects named in the title. Comparisons are made with related birds. The author points out that differences in the calls make it easy to differentiate sexes of adults in the field.

BIRDS--WATERFOWL--Continued

Ringleben, H. AUS DEM LEBEN DES MITTELSÄGERS (MERGUS SERRATOR L.). Part 1. Vogelwelt 72: 43-50, 84-87, 119-128. 1951. [From Auk 69(2).]
"A detailed life history of the Red-breasted Merganser. Social life before and during breeding season and a description of the various types of displays, nest location, incubation, and hatching."

Schuyler, Keith C. NEW DEAL FOR DUCKS. Pennsylvania Game News 23(2): 8-12, illus. May 1952.
Popular presentation of the value of farm wildlife ponds for the breeding and hunting of ducks and other wildlife, and of their value to the farmer for stock watering, fire control, etc. These ponds are larger, shallower, weedier, and cheaper than fish ponds. They often pay large dividends in ducks, muskrats, and even upland game. Large numbers of these ponds in many states are desired. Sources of information on construction are listed.

Scott, Peter. WILD GEESE AND ESKIMOS; A JOURNAL OF THE PERRY RIVER EXPEDITION OF 1949. 254 p., illus. Scribner's, N. Y. 1951.
An entertaining day by day account of weather, landscape, Eskimos, mammals, and particularly birds in Northern Northwest Territories, Canada.--N. Hotchkiss.

Sieh, James G. ANALYSIS OF THE 1948, 1949, AND 1950 WATERFOWL KILL SAMPLES IN IOWA. Proceedings of the Iowa Academy of Science 58: 533-551, map. 1951.
Hunting regulations, size of harvests, species composition of harvest, hunting statistics. Data are given for counties and for the whole state.

Snyder, L. L. and H. G. Lumsden. VARIATION IN ANAS CYANOPTERA. Occasional Papers of the Royal Ontario Museum of Zoology no. 10: 1-18, illus. Aug. 1951.
Plumages and other variation in the cinnamon teal. Five races are recognized, 3 of them new. The North American form becomes A. c. septentrionalium, new subspecies.

Steiner, J. Thomas. WATERFOWL IN THE DELTA. Mississippi Game and Fish 16(11): 3-4, 11, illus. June-July 1952.
About half of the existing waterfowl habitat in Mississippi is to be ditched, drained, and farmed. Flood control impoundments have helped the birds, and areas managed for waterfowl are receiving heavy use, but much remains to be done if habitat improvement is to catch up with destruction. This article tells what the situation is and what is being done about it. Waterfowl hunting statistics are given for the state.

Viereck, H. v. UEBER DIE URSACHEN FUER DIE ABNAHME DER RINGELGANS (BRANTA BERNICLA) IN DEN WINTERQUARTIEREN. Vogelwarte 16: 18-22. 1951. [From review by E. Mayr in Auk 69(2).]
"European Brant, badly decimated by the eelgrass disease, are still decreasing. Since eelgrass is also beginning to recover in European waters, unfavorable conditions in the breeding quarters may be responsible for the continued decline."

Wingard, Robert G. FOODS OF SOME MIGRATORY WATERFOWL IN PENNSYLVANIA. Journal of Wildlife Management 16(2): 228-230. April 1952.
Gizzard contents of 54 specimens (18 of black duck) of 13 species. Apparently diving ducks obtain very little food locally.

BIRDS--UPLAND GAME--GENERAL

Keefe, Jim. THE TALE OF TWO SPECIES. Missouri Conservationist 13(6): 6-7, 13, illus. June 1952.
The wild turkey has a future in Missouri if local people will give it a chance. The population has declined in recent years with heavy timber cutting and is now about 2000, but large areas of turkey habitat do and will remain in the state. The prairie chicken is present in larger numbers, but its future is very dark because of increasingly intensive agricultural use of its habitat. Its extinction in the state is expected.

Lawson, L. L. SPECIAL INVESTIGATIONS ON THE STATUS OF PHEASANT AND CHUKAR PARTRIDGE IN ARIZONA. Arizona Game and Fish Commission, Arizona Game Surveys, Project Job Completion Reports, 1951. Project 40 R 2 - WP 2 - J 3. 1-5 p., illus. Mar. 31, 1951.
Surveys proved that chukars have done poorly in Arizona. No more should be released unless stock can be obtained from the Near East. Pheasants have been unsuccessful except in the Springerville area.

McGinnes, Burd S. THE AMERICAN WOODCOCK. Delaware Board of Game and Fish Commissioners. 1-2 p. 1950.
Compilation that briefly treats appearance, foods, enemies, migration, courtship, management. Limiting factors are overhunting, shortage of habitat, and spring burning. Woodcock management favors areas of low growing, second growth hardwoods such as alder, birch and aspen. Breeding spots are sometimes created by bulldozing openings in the forest.

BIRDS--QUAIL

Caulk, Mrs. L. D., Jr. A REPORT ON BOBWHITE QUAIL COLINUS VIRGINIANUS. [Cover title: Bobwhite Quail.] Delaware Game and Fish Commission. 1-7 p. 1950?
A popular, compiled account of life history, ecology, and management.

Davidson, Joe B. FOUND! BETTER QUAIL FOOD. Outdoors in Illinois 18(1): 18-19, illus. Spring 1952.
Recommends extensive planting of bicolor lespedeza in Illinois and reviews its advantages.

Frings, Hubert and William A. Boyd. EVIDENCE FOR OLFACTORY DISCRIMINATION BY THE BOBWHITE QUAIL. American Midland Naturalist 48(1): 181-184. July 1952.
Authors' summary: "Caged bobwhite quail learned to discriminate between two feeders which to man were apparently the same. Changes in the appearance of the feeders did not affect the discrimination. Interchanging the feeders between cages of quail showed that the olfactory sense was probably involved. The differentiating odor substance was not determined, but it is suggested that it is in the nature of a species odor transferred to objects as the quail touches them. Since the odor was undetectable to man, the quail probably has a rather well developed sense of smell."

BIRDS--QUAIL--Continued

Harper, T. A., R. V. Boucher, and E. W. Callenbach. INFLUENCE OF SOURCE AND QUANTITY OF VITAMIN A INGESTED UPON LIVER STORAGE AND SURVIVAL TIME OF BOBWHITE QUAIL. Poultry Science 31(2): 273-283, graphs. March 1952.

"Twenty-one hundred and seventy bobwhite quail chicks were used to measure the relative values of increasing levels of true vitamin A and provitamin A in the diet for growth, livability, liver storage of vitamin A, and survival, and to measure the relationship between vitamin A liver storage and survival under satisfactory and adverse conditions." Two of the conclusions are: "After transfer to the basal vitamin A-low diet 16-week old quail that had been fed either 'Black Cod' liver oil or crystalline carotene exhibited a highly significant direct relationship between survival time and the level of vitamin A in the diet. Quail chicks did not survive to 8 weeks of age when fed the basal diet unsupplemented with vitamin A."

Kozicky, Edward L. and George O. Hendrickson. FLUCTUATIONS IN BOB-WHITE POPULATIONS, DECATUR COUNTY, IOWA. Iowa State College Journal of Science 26(3): 483-489, illus. April 1952.

Data on spring and fall numbers, winter mortality, and rate of increase on a 7713-acre area, 1935-44 and 1949-51. Rate of summer production varied from 59.2% to 465.5%. Observed fall and winter losses varied from 20.3% to 87.8%. Hunting losses were not an important limiting factor. Number of days on which there was snow cover was postively correlated with fall and winter mortality. High spring populations were followed by high fall populations. In most years, the rate of increase was rather high when the spring population was low.

Lawson, Louie L. QUAIL RESEARCH AND INVESTIGATION IN SOUTHERN ARIZONA. Arizona Game and Fish Commission, Arizona Game Surveys, Project Job Completion Reports, 1951. Project 40 R 2 - WP 1 - J 1. 1-5 p. Nov. 1, 1950.

Report on mid-summer survey of Gambel quail, scaled quail, cottontail, and white-winged dove. Quail reproduction was poor. A closed season in 1950 was recommended and accepted. A table shows numbers of the 4 species seen in various areas.

Lawson, Louie L. MASKED BOBWHITE AND BENSON QUAIL TRAPPING IN SONORA, MEXICO. Arizona Game and Fish Commission, Arizona Game Surveys, Project Job Completion Reports, 1951. Project 40 R 2 - WP 2 - J 2. 1-5 p., illus. Jan. 15, 1951.

"Twenty-five Masked Bobwhite and 61 Benson quail were live-trapped in Sonora, Mexico and brought back to the United States. Ten Masked Bobwhite and 6 Benson quail were retained by J. Stokley Ligon. The remainder of the quail were released at Fort Huachuca, Beach Ranch and Sierra Colorado Mountains in Arizona."

Lay, D. W. BOBWHITE QUAIL MANAGEMENT. Texas Game and Fish 10(6): 22-25, illus. May 1952.

Describes a number of practices that Texan farmers can employ to increase bobwhite populations. These include ploughed fire lanes, toleration of an 8-foot weed and shrub fence row, choice of crops favorable to quail, properly timed mowing, fallow ploughing, fertilization, use of fire in overly dense cover, and protection of odd spots from grazing.

Lay, D. W. BOBWHITE QUAIL MANAGEMENT. Texas Game and Fish 10(7): 18-21, illus. June 1952.

Suggestions for landowners. Use of bicolor lespedeza and paspalum (P. floridanum and plicatulatum), and need of cover. "East Texas is in the process of a gigantic pasture improvement program that is destroying the cover on which thousands of coveys depend. Landowners who later wish to have quail will find that replacing the cover is slow and expensive. One of the most constructive things that can be done by persons interested in quail is the prevention of the destruction of essential cover." Stripe and odd spots can be so used. Cover can be increased with brush piles and half-cut small trees. Use and

BIRDS--QUAIL--Continued

culture of multiflora rose is discussed; the author states that it does not spread from runners or seed. Over-shooting is considered a rare cause of quail scarcity.

Lehmann, V. W. VITAMIN A--VITAL ELEMENT FOR BOBWHITES. Texas Game and Fish 10(6): 9-11, illus. May 1952.
Large numbers of quail died on the King Ranch, Texas, in late winter of 1950-51. Mortality in heavy brushland was estimated at 95%. Many quail were found in burrows where they had hidden and died. Disease, parasitism, and loss of weight were not severe, but vitamin A reserves were low. A hot dry summer had led to little vitamin A production and cold, wet winter weather had inhibited feeding. Low vitamin A reserves were found in some quail, especially young, at all seasons, apparently as a result of drought. Individual differences were marked. Vitamin A reserves were high when quail were feeding on goatweed (Croton), oak, and mesquite seeds; low when quail were feeding on grass seeds, cactus fruits, and insects. Feeding on buds, flowers, and dough-stage seeds--but no leaves--favored vitamin A storage. General breeding, and survival of young, was dependent on enough rainfall to produce verdant range, and varied with this condition. Laying hens require much vitamin A. Only good, tall grass semi-prairie is suitable for sustained high quail production and there is less of it in Southern Texas than ever before. Quail management should favor the tall perennial grasses. Control of nest predators also helps. Harvest by hunters might be increased in moist years, reduced or eliminated in drought years.

Murray, Robert W. and Howard R. Bissland. FOOD AND COVER PLANTINGS FOR QUAIL. Florida Game and Fresh Water Fish Commission. 1-7 p., illus. No date. 1951?
A 4 x 8-inch leaflet that tells how to grow the following plants in Florida: Thunbergii lespedeza, partridge pea, common lespedeza, Florida beggarweed, multiflora rose. Most of these plants require considerable care and fertilization. Multiflora rose should be planted with caution and only on an experimental basis.

Springs, A. J., Jr. RELATION OF BOBWHITE QUAIL TO MESQUITE GRASSLAND TYPE. Texas Game and Fish Commission, F. A. Report Series no. 9: 1-48, illus. June 1952.
Report of observations made on an 8,800-acre study area in South Texas, 1946-51. Half-cut mesquite made good cover, and if cut in spring had good survival. Lespedeza bicolor, Rosa multiflora, and several of the other plants tried had poor survival. Quail populations were censused regularly and showed wide variation. 27% of 47 nests were successful; 33% were destroyed by snakes and small mammals. Stomach contents of 35 chicken snakes and 34 whip snakes are listed; 45% of the chicken snakes contained quail eggs or small quail. Five returns of banded birds revealed no travel; one revealed travel of half a mile. The author recommends continuation of controlled hunting, half-cutting of mesquite, strip-disking to promote growth of wild foods, and continued experimentation with Rosa multiflora.

Stanford, Jack A. "...AND THEIR ADOPTION TRIED..." Missouri Conservationist 13(5): 1-3, 15, illus. May 1952.
A report of experiments with the adoption method of quail restocking, in which wild-caught adults are encouraged to adopt hatchery-reared chicks, and the family then gently released. Facts and figures demonstrate that the method, as now used, is of no value in increasing quail. Very few of the released birds were ever bagged.

BIRDS--PHEASANTS

Anonymous. PHEASANTS IN THE SPOTLIGHT. Idaho Wildlife Review 4(5): 3, illus. May-June 1952.
"Annual pheasant netting operations on Lewiston Orchards preserve during the 1951-1952 winter season resulted in a catch of 1,011 ringnecks..." This article tells how the birds were caught by use of truck, spotlight, and hand net.

Dale, Fred H. SEX RATIOS IN PHEASANT RESEARCH AND MANAGEMENT. Journal of Wildlife Management 16(2): 156-163. April 1952.
Discusses the importance of pheasant sex ratios in population study and illustrates some of the shortcomings of studies that have not taken this into account. Develops a formula for determing the production per hen from the change in sex ratio from spring to fall. The difficulties of estimating pheasant sex ratios accurately are discussed, and the plea is made that technicians attack this problem as one of the handicaps to adequate population study.--F. H. Dale.

Knoder, Eugene. THE EFFECTS OF CERTAIN HORMONES ON PHEASANTS. Modern Game Breeding and Hunting Club News 22(4). 1 p., unnumbered. April 1952.
Effects of several hormones on captive pheasants.

Kozicky, Edward L. and Henry G. Weston, Jr. A MARKING TECHNIQUE FOR RING-NECKED PHEASANTS. Journal of Wildlife Management 16(2): 223. April 1952.
Describes a quick method of marking tail feathers with auto lacquer on a base of household cement. The marks were distinguishable up to 400 yards with an 8-power glass.

Kuroda, Yasukichi. NOTES ON THE MOULTS AND MOVEMENTS OF THE KOREAN RING-NECKED PHEASANT, PHASIANUS C. KARPOWI. Tori 13(60): 33-37. 1950. [From Auk 69(2).]
"Cocks molt early in fall and move into hills; females and young molt later. Females in winter are found chiefly in deciduous forest and males in mixed deciduous and coniferous forests. Local movements occur in relation to harvesting of crops. In Japanese with English summary."

Smith, J. Donald. THE PHEASANT SITUATION IN HAWAII, 1950. Board of Agriculture and Forestry, Hawaii. 1-13 p. 1951?
The Hawaiian pheasant population had declined greatly by 1946. Many explanations and panaceas have been suggested, most of them specious. The truth seems to be that the damage was done by intensified agriculture, chemical weed control, and overgrazing. The author uses U. S. work to show that game farms, closed seasons, refuges, and predator control would not be the answer. Habitat improvement is needed, both on public areas and private lands that will be opened to public shooting. Very little private land is now open to the public.

Wilder, Norman G. THE RING-NECKED PHEASANT. [Cover title: Pheasant Management.] Delaware Game and Fish Commission. 1-5 p. Nov. 1950.
Delaware is on the southern limit of pheasant range, but these birds are common in most of New Castle County, and colonies occur southward to the Maryland line. About 1500 are harvested in the state each fall. The present paper is a compiled summary of life history and management information.

BIRDS--GROUSE, PARTRIDGE, ETC.

East, Ben. BALLET OF THE BRUSHLANDS. Beaver, A Magazine of the North 282: 16-19, illus. March 1952.
Vivid description of courtship behavior of sharptail grouse, with photographs of the dance.

BIRDS--GROUSE, PARTRIDGE, ETC.--Continued

Erickson, Arnold B. and Walter H. Petraborg. PINNATED GROUSE - PRINCE OF THE PRAIRIE. Conservation Volunteer 15(87): 6-11, illus. May-June 1952.
The prairie chicken, once common in parts of Minnesota, has declined greatly since the middle 1920's, owing largely to intensified farming. This paper reviews the habits of the bird, gives the results of some dancing ground censuses and counts by mail carriers, and reports the kill of pinnated and sharp-tailed grouse in open seasons, 1921-1950. The season on prairie chickens has been closed since 1942, when the kill was about 58,000. A marginal existence at best is predicted for the bird in Minnesota.

Hart, Chester M., Orville S. Lee, and Jessop B. Low. THE SHARP-TAILED GROUSE IN UTAH, ITS LIFE HISTORY, STATUS, AND MANAGEMENT. Utah State Department of Fish and Game, Publication no. 3. x + 79 p., illus. No date. 1952.
A monographic study of this grouse in Utah. It is the result of the work of a number of individuals over 15 years. Extended cultivation, overgrazing, and burning have so reduced the habitat of this once abundant bird that only about 1500 remain in the state. Immediate assistance in the form of managed refuges is needed. In the long run, improved grazing practices may help. Flushing bars would prevent much mortality, and so would properly timed ploughing and burning of fields. Some subjects treated in this paper are: distinguishing characteristics; weights; measurements; sex differentiation; history, status, and range in Utah; reproduction habits; nesting; care of young; survival; calls; resting and dusting habits; flight; movements; flocking; wariness; foods and feeding; habitat requirements; limiting factors; relation to agriculture; ecological relations with other game birds; recommendations for management and research.

Hungerford, Kenneth Eugene. THE ECOLOGY AND MANAGEMENT OF THE IDAHO RUFFED GROUSE (BONASA UMBELLUS PHAIA). PhD thesis, University of Michigan, 1952. [From long abstract in Dissertation Abstracts 12(3).]
Foods; water needs; behavior and habitat requirements in relation to vegetative type, topography, and micro-climate; relation of grouse populations to parasites, disease, accidents, predation, and grazing; an adaptation of the King census method for pre-hunting season populations; census results for 5 years; relative productivity of area; adequacy of harvest. The area is highly productive of grouse and the harvest might well be far heavier. Predation, disease, etc., are not limiting factors, but cattle grazing can seriously deplete food and cover used by broods. Approved range and forest practices are conducive to good grouse production on cut-over white pine lands. Minor changes of practice that will result in better grouse production are recommended.

Janson, Reuel G. PRAIRIE GROUSE POPULATION TRENDS. South Dakota Conservation Digest 19(6): 2-5, illus. June 1952.
Only sharptails and prairie chickens are legal game in South Dakota, but ruffed and sage grouse occur in the state. 95% of the grouse bagged are sharptails, though prairie chickens were once abundant. Grouse numbers in the state have fluctuated rather locally and irregularly for many years. Weather, through its effect on the habitat, seems the chief controlling factor. Expanding agriculture has greatly reduced the habitat. The most recent high was in 1947-49; the most recent low in 1950-51. Tables show populations, hunting statistics, and sex ratios for recent years.

Miller, Townsend. VAGABOND KINGS. Texas Game and Fish 10(7): 4-7, illus. June 1952.
Popular account of Attwater and lesser prairie chickens in Texas. A map shows past and present ranges in state. The breeding areas are now isolated patches, for expanding agriculture has greatly reduced the habitat. "In order to stimulate recognition of the prairie chicken's value as a game bird and to encourage landowners to consider his welfare, the Texas Game and Fish Commission is now investigating the possibility of permitting a short, carefully controlled open season in some Panhandle counties this autumn."

BIRDS--GROUSE, PARTRIDGE, ETC.--Continued

Yocom, Charles F. COLUMBIAN SHARP-TAILED GROUSE (PEDIOECETES PHASIANELLUS COLUMBIANUS) IN THE STATE OF WASHINGTON. American Midland Naturalist 48(1): 185-192, illus. July 1952.
The sharp-tail has declined greatly in Washington because of intensified agriculture and field burning. It persists only in certain rough, unfarmed areas. This paper traces the decline, and present range, county by county.

BIRDS--TURKEY

Anonymous. THE FLORIDA WILD TURKEY. Florida Game and Fresh Water Fish Commission. 1-18 p., illus. 1950.
A popular bulletin with much substantial information on habits, kill, and management. Florida has an increasing population of about 35,000 wild turkeys and hopes to increase this to 150,000 within 15 years by transplanting wild birds to suitable areas and protecting these areas until the population can stand shooting. Food plantings will be made in managed areas. There are more than 8 million acres of excellent turkey habitat in the state, and some land-use trends favor turkeys. Predators are considered an insignificant factor.

Hall, John M. TURKEY HUNT INFORMATION. Arizona Game and Fish Commission, Arizona Game Surveys, Project Job Completion Reports, 1951. Project 53 R 1 - WP 2 - J 7. 1-3 p., illus. Jan. 3, 1952.
Hunting statistics, 1946-50. Total kill in state varied from 296 to 526 with no evident trend.

Reeves, Robert H. ARIZONA MERRIAM'S TURKEY MANAGEMENT SURVEYS, JOB COMPLETION REPORTS, 1950-1951. Arizona Game and Fish Commission. 96 p., illus. 1952.
This volume consists of 7 separately paged reports dealing with summer and winter range investigations, population trends, sex and age ratios, and management recommendations. There is also much information on the value of livestock exclosures to turkeys, on food habits of turkeys, and on food habits of potential turkey predators. Little predation on turkeys was actually found; this is attributed largely to predator control. Summaries are scattered through the reports at various places; almost every page of the volume must be scanned to see what all is included.

BIRDS--DOVES AND PIGEONS

Anonymous. ARE PIGEONS GIVING US THE BIRD? Pest Control 20(6): 16, 18, 20, 40, illus. June 1952.
Outlines the health and nuisance problems created by semidomestic pigeons, and tells of many control efforts that have been made. Sources of several supposed pigeon repellents are listed. Many ingenious tricks and devices have been used to control pigeons, but none have been entirely satisfactory, especially where large areas are concerned.

Boldt, Wilbur. MOURNING DOVES AND SHELTERBELTS. North Dakota Outdoors 14(12): 4-5, illus. June 1952.
During the summer of 1950 the author found 54 active or recently active nests in 5 shelterbelts. Forty-five young were known to have been brought off. Russian olive and Chinese and American elms are used extensively for nesting. Spruce, where available, is a highly preferred nesting tree.

Boldt, Wilbur, and George O. Hendrickson. MOURNING DOVE PRODUCTION IN NORTH DAKOTA SHELTERBELTS, 1950. Journal of Wildlife Management 16(2): 187-191. April 1952.
About 39 doves in 5 shelterbelts near Jamestown, North Dakota, produced about 64 young. Nesting was from May 15 to September 25 with the peak during August 13-19. Doves preferred Chinese and American elms and Russian olive trees for nesting. 18 nests failed and 7 were partially successful. Nesting occurred at a rate of about 1 pair to 3 acres of shelterbelt, or 4 pairs per mile. Production was about 15 per mile, or 1 per acre.

BIRDS--DOVES AND PIGEONS--Continued

Davison, Verne E. FEED THOSE DOVES. Sports Afield 127(6): 46-47, 120, illus. June 1952.
Recommends planting large plots to pokeberry for the benefit of mourning doves, and tells how to propagate this plant from seed. It is the only field perennial eaten by doves, and it is also of value to many other forms of wildlife. One acre of pokeberry stand should feed 100 or more doves well all winter.

Haugen, Arnold O. TRICHOMONIASIS IN ALABAMA MOURNING DOVES. Journal of Wildlife Management 16(2): 164-169, illus. April 1952.
Reports the 1950-51 epidemic in the Southeast: seasons of incidence, age ratios of birds affected, effect on weight and reproduction, scarcity of carriers during hunting season, and effect on the population. Losses were high, and if the epidemic continues for another year the situation will become serious.

Lawson, Louie L. WHITE-WINGED AND MOURNING DOVE INVESTIGATION. Arizona Game and Fish Commission, Arizona Game Surveys, Project Job Completion Reports, 1951. Project 40 R 2 - J 1. 1-11 p. Oct. 27, 1950.
Data on abundance and breeding success of these doves in Arizona, and their bearing on hunting regulations. White-wings are doing well and could stand a heavier, earlier harvest. Mourning doves are doing less well and the season on them should be shortened. Nest studies seem to afford a poor basis for judging population trends.

Schorger, A. W. THE NUMBER OF EGGS LAID BY THE PASSENGER PIGEON, ECTOPISTES MIGRATORIUS. Auk 69(2): 201. April 1952.
Proof that this extinct bird never laid more than one egg per set.

BIRDS--NON-GAME

Croskin, Horace. OBSERVATIONS OF DUCK HAWKS NESTING ON MAN-MADE STRUCTURES. Auk 69(3): 246-253, illus. July 1952.
Summary of records, with observations on a successful nesting in Philadelphia.

Fischer, Richard B. DATA ON THE FOOD HABITS OF LOCAL OWLS. Proc. Linn. Soc. New York, nos. 58-62: 46-48. 1951. [From Auk 69(3).]
"In vicinity of New York; seven species of owls."

Rusling, William J. FOOD HABITS OF NEW JERSEY OWLS. Proc. Linn. Soc. New York, nos. 58-62: 38-45. 1951. [From Auk 69(3).]

Stewart, Paul A. DISPERSAL, BREEDING BEHAVIOR, AND LONGEVITY OF BANDED BARN OWLS IN NORTH AMERICA. Auk 69(3): 227-245, illus. July 1952.
Distance and direction of dispersal, speed and season of migration, time of nesting, number of broods, age at nesting, average and extreme life span. Maximum distance traveled was 1075 miles, but most were retaken within 50 miles. Barn owls in the North are partly migratory, those in the South are relatively sedentary. Nesting occurs all during the year except in Southern California, where it is in the spring. Individuals nest within 200 miles of their hatching site. Two broods a year are sometimes reared, and 1 individual nested the same year it was hatched. The average life span is about 13 months in the North, and about 27 months in the South. One owl lived at least 11½ years. Frequency of reproduction appears to be correlated with availability of prey, especially Microtus.

Tordoff, Harrison Bruce. A SYSTEMATIC STUDY OF THE AVIAN FAMILY FRINGILLIDAE, BASED ON THE STRUCTURE OF THE SKULL. PhD thesis, University of Michigan, 1952. [Long abstract in Dissertation Abstracts 12(3).]
The subfamily Carduellinae is transferred to the Ploceidae. Tanagers grade into the finches and are here placed in the Fringillidae. The classification and evolution of the major finch groups is discussed. "In the author's opinion, the Fringillidae have served as the central stock from which the other New World nine-primaried Oscines have developed...The recent distribution of the

BIRDS--NON-GAME--Continued

genera which are judged to be primitive on morphological grounds corresponds closely with the distribution expected if Matthew's hypothesis concerning the causes and methods of dispersal of animal groups is correct."

Turček, F. THE CONTINENTAL JAY IN RELATION TO THE OAK AND ITS DISTRIBUTION (A vztahu sojky (Garrulus glandarius L.) k obnove dubu (Quercus sp.)). Lesnická Práce 29(9-12): 385-396. 1950. [From review by Mrs. M. M. Nice in Auk 69(2).]

"English summary. About 25 years ago jays began to underplant a 100-year-old monoculture of Scotch pine on 5412 hectares in West-Slovakia. Now about half the forest is underplanted and in some stands the oak undergrowth is a dense canopy. Average underplanting is about 50% of artificial planting. A map of the Eastern Hemisphere shows the close correspondence between the ranges of the oak and the jay."

REPTILES AND AMPHIBIANS

Anderson, Paul K., Ernest A. Liner, and Richard E. Etheridge. NOTES ON AMPHIBIAN AND REPTILE POPULATIONS IN A LOUISIANA PINELAND AREA. Ecology 33(2): 274-278, illus. April 1952.

Records of 677 individuals of 40 species trapped by a long ditch are correlated with habitat conditions along the ditch. The ditch afforded far better and more representative samples than did standard collecting.

Baxter, George Theodore. THE RELATION OF TEMPERATURE TO THE ALTITUDINAL DISTRIBUTION OF FROGS AND TOADS IN SOUTHEASTERN WYOMING. PhD thesis, University of Michigan, 1952. [From long abstract in Dissertation Abstracts 12(2).]

Based on field observations and laboratory experiments with 5 species. "The most important influence of temperature on the altitudinal distribution of amphibians in this region is the length of the growing season, which is determined by the annual march of daily temperatures, and prevailing air and water temperatures during the growing season which determine the rate of development of eggs and larvae, and rate of growth and time of sexual maturity of adults... For any species, the tadpole period at the upper limit of its altitudinal distribution requires the entire growing season for completion; it begins later and is extended over a longer period at higher elevations."

Brunson, Royal Bruce, and Herald A. Demaree, Jr. THE HERPETOLOGY OF THE MISSION MOUNTAINS, MONTANA. Copeia 1951 (4): 306-308. Dec. 1951.

Locality and habitat data for 6 kinds of amphibians and 5 kinds of reptiles.

Cagle, Fred R. A LOUISIANA TERRAPIN POPULATION (Malaclemys). Copeia 1952(2): 74-76, graph. June 1952.

Notes on intergradation, sex ratio, size and age at sexual maturity, and growth, as determined from study of 70 specimens. Comparisons are made with the biology of captive individuals in North Carolina as described by Hay and Hildebrand. Growth and attainment of sexual maturity were more rapid in the wild Louisiana sample.

Conant, Roger. THE REPTILES OF OHIO. Second edition, with revisionary addenda. University of Notre Dame Press, Notre Dame, Indiana. 284 p., illus. 1951. $3.50 (bound). [From review by K. P. Schmidt in Copeia 1952(1).]

This classic state paper of 1938, distinguished by its great usefulness to both amateurs and professionals, has been brought up to date by a completely new set of maps and 84 pages of revisionary addenda. Recent revisions and other work have been taken into account, but the bulk of the text remains unchanged.

Cowles, Raymond B. POPULATIONS OF XANTUSIA VIGILIS THREATENED WITH EXTERMINATION. Copeia 1952(2): 118-119. June 1952.

Intensive collecting by boys hired by commercial collectors have virtually eliminated this lizard and destroyed its specialized habitat (decaying Joshua

REPTILES AND AMPHIBIANS--Continued

trees) over large areas. The lizard has a very low reproductive rate and its habitat is slow to form. Since this animal is especially valuable in research, commercial collecting should cease and biologists should refuse to buy these lizards. Education of the public is also recommended.

Goodman, John David. TAXONOMIC STUDIES ON THE FAMILY OCHETOSOMATIDAE LEAO, 1944, AND THE LIFE HISTORY OF STOMATREMA GUBERLETI BYRD, 1937. TREMATODA. PhD thesis, University of Michigan, 1952. [From long abstract in Dissertation Abstracts 12(2).]
Important monographic study of a group of flukes common in reptiles and having certain life history stages in amphibians. Many taxonomic changes are proposed. Stomatrema, a parasite of Farancia, has stages in Siren and Amphiuma.

Hunt, John Steger. THE LIFE HISTORY OF GORGODERA VIVATA N. SP. (TREMATODA: GORGODERIDAE). PhD thesis, University of Michigan, 1952. [Long abstract in Dissertation Abstracts 12(2).]
Adults in green frogs (R. clamitans).

Juszczyk, W. THE PRESERVATION OF NATURAL COLORS IN SKIN PREPARATIONS OF CERTAIN AMPHIBIA. Copeia 1952(1): 33-38, illus. June 1952.
By removing and drying the skins.

Lewis, Thomas H. DARK COLORATION IN THE REPTILES OF THE MALPAIS OF THE MEXICAN BORDER. Copeia 1951(4): 311-312. Dec. 1951.
"Three of the four genera which have taken up a permanent abode on the lava show marked melanotic changes."

Martof, Bernard. EARLY TRANSFORMATION OF THE GREENFROG, RANA CLAMITANS LATREILLE. Copeia 1952(2): 115-116. June 1952.
Large numbers of greenfrogs at Ann Arbor, Michigan transformed the same year the eggs were laid. This seems to be the rule when eggs are laid early in the season; overwintering tadpoles are from late eggs. Previous workers have considered overwintering to be the rule.

McConkey, Edwin H. A NEW SUBSPECIES OF OPHISAURUS ATTENUATUS, WITH A KEY TO THE NORTH AMERICAN FORMS. Natural History Miscellanea no. 102: 1-2. April 1952.
Includes key to and ranges of the 4 U. S. forms.

Mosimann, James E. and George B. Rabb. THE HERPETOLOGY OF TIBER RESERVOIR AREA, MONTANA. Copeia 1952(1): 23-27. June 1952.
Report on 123 specimens of 4 species of amphibians and 7 of reptiles taken in Northcentral Montana. Information is given on habits, habitats, and variation.

Oliver, James A. THE PREVENTION AND TREATMENT OF SNAKEBITE. Animal Kingdom 55(3): 66-83, illus. May-June 1952.
Statistics on snake bite in the U. S.; seasonal and geographic incidence of bites; venom apparatus; striking and biting; protective clothing; how to avoid snake bites; first aid treatment of bites; recognition of venomous snakes of the U. S.

Seibert, Henri C. POPULATION DENSITY OF SNAKES ON PENIKESE ISLAND, MASSACHUSETTS. Copeia 1951(4): 314. Dec. 1951.
Common garter snakes introduced on a 65-acre island reached a density in the neighborhood of 34 per acre and were not appreciably reduced by the killing of 550.

REPTILES AND AMPHIBIANS--Continued

Smith, Malcolm. THE BRITISH AMPHIBIANS AND REPTILES. Collins, London. vol. 20. 318 p., illus. 1951. 21s. [From review by Chapman Grant in Scientific Monthly 73(6).]

Though beyond the usual scope of Wildlife Review, this book is listed because of its outstanding breadth and quality. It is considerably more than a handbook, for in addition to having keys, maps, and detailed accounts of life histories it treats the physiology of the families, internal and external parasites, and devotes a chapter to research still needed in herpetology. There are 18 color plates, 33 photographs, 5 drawings, and a map for each species. "Smith has written a book, which, though strictly scientific, ranks in interest and readability with White's Natural History of Selborne."

Smith, Philip W. and Dorothy M. THE RELATIONSHIP OF THE CHORUS FROGS, PSEUDACRIS NIGRITA FERIARUM AND PSEUDACRIS N. TRISERIATA. American Midland Naturalist 48(1): 165-180, illus. July 1952.

A key is given to the 5 subspecies of P. nigrita; ranges and characters of feriarum and triseriata are redefined and their variation is discussed.

Stebbins, Robert C. AMPHIBIANS OF WESTERN NORTH AMERICA. University of California Press. ix + 539 p., illus. 1951. $7.50. [From review by E. R. Dunn in Scientific Monthly 74(4).]

The area covered by this excellent handbook is from the Mexican border northward and from the Pacific Ocean to the Great Plains. There are keys, descriptions, much life history and ecological information, range maps, and numerous illustrations, many of them arranged to aid in comparisons. Eggs and larvae are illustrated. "Eastern students cannot fail to be stimulated by Stebbins' original methods and format, and view the book somewhat enviously and with a faint sense of shame; just as they must also do when they look east at Smith's Reptiles and Amphibians of the British Isles. Dr. Stebbins and his publishers are to be congratulated on this very fine piece of natural history."

Stille, W. T. THE NOCTURNAL AMPHIBIAN FAUNA OF THE SOUTHERN LAKE MICHIGAN BEACH. Ecology 33(2): 149-162, illus. April 1952.

A study of the ecology of tagged frogs and toads, chiefly Bufo w. fowleri. Tags do not appear to affect behavior, but eventually wear out. Growth, home range, behavior, and effect of light in controlling activity are discussed, but emphasis is on water relationships. Toads visit the water margin mainly for water, which is absorbed through the skin, chiefly that of the groin. Toads living in moist areas have more body water and visit the lake less often.

Stickel, William H. VENOMOUS SNAKES OF THE UNITED STATES AND TREATMENT OF THEIR BITES. U. S. Fish and Wildlife Service, Wildlife Leaflet 339: 1-29, illus. June 1952.

This leaflet is an attempt to answer many common questions about venomous snakes, particularly about treatment of bites. Other subjects treated are: How to distinguish harmless and venomous snakes, natural history, and facts about snake bite. Information is given about size, rattles, fangs, striking, relative deadliness, number of young, and other points of general interest. Maps show the distribution of all venomous species of the U. S.

Webb, Charles C. FEELING FOR TURTLES. Farm Quarterly 7(2): 48-49, 113-114, illus. Summer 1952.

A veteran outdoorsman and turtle hunter tells how to catch snappers by feeling for them in their hiding places and how to catch them on lines. He also takes up construction and use of the gaff hook, handling methods, holding pens, dressing, marketing, and cooking. The author (in Ohio) gets 40¢ a pound live weight and 80¢ a pound dressed and apparently has no marketing problem. [No profitable market for snappers could be found in the Washington-Baltimore area in 1950.]

REPTILES AND AMPHIBIANS—Continued

Williams, John E. HOMING BEHAVIOR OF THE PAINTED TURTLE AND MUSKTURTLE IN A LAKE. Copeia 1952(2): 76-82, illus. June 1952.
Turtles were caught at specific stations along the shore, marked with paint for recognition at a distance, and released at a single point on the shore. A highly significant amount of homing was discovered, with some individuals homing repeatedly. A good many others did not seem to home.

FISHES

Everett, Charles. FRESH WATER FISHES OF THE PACIFIC COAST: IDENTIFICATION. Binfords and Mort, Portland, Oregon. 45 p., illus. 1949. 50¢. [From Copeia 1952(1).]
"A handy tacklebox guide to the basic fish types of interest to the fisherman and layman. Scientific and common names, size, color, range, and brief general notes are included."

INVERTEBRATES

Anonymous. CRAWFISH CONTROL METHODS. U. S. Fish and Wildlife Service, Fishery Leaflet 401. 2 p. June 1952.
Crawfish control is one of those nuisance problems about which wildlife biologists frequently receive inquiries. This leaflet describes 2 methods of destroying crawfish over large areas with DDT-treated bait, and 5 methods of killing them in their burrows.

Baker, Edward W. and G. W. Wharton. AN INTRODUCTION TO ACAROLOGY. Macmillan Co., N. Y. 465 p., illus. 1952. $10.00. [From review by J. S. Wade in Proceedings of the Entomological Society of Washington 54(3).]
"In addition to a short introduction covering the general structure, development, and ecology of mites, this volume considers each family as a unit. Keys are provided which are designed to enable the reader to place any acarine in its proper family. In the discussion of each family, information (where known) is given as follows: a diagnosis of characters, a list of genera and their type species, a discussion which includes the biology, the economic, or medical importance with emphasis on important species, and a list of references to pertinent literature. In addition, 377 line drawings of the representatives of the families are included."

Berner, Lewis. THE MAYFLIES OF FLORIDA. University of Florida Press. University of Florida Studies, Biological Science Series 4(4). xii + 267, illus. 1950. $5.50.
Detailed monograph, with much ecological information.

Bodenheimer, F. S. INSECTS AS HUMAN FOOD. W. Junk, The Hague. 352 p. 1951. 10.00 Dutch guilders. [From review by E. O. Essig in Scientific Monthly 73(6).]
Insects are of major importance in the nutrition of primitive man, especially in the tropics. This thorough, technical book tells what kinds are eaten in all parts of the world and discusses their nutritive value. The literature is carefully covered.

Dougherty, E. C. EVOLUTION OF ZOOPARASITIC GROUPS IN THE PHYLUM NEMATODA, WITH SPECIAL REFERENCE TO HOST-DISTRIBUTION. Journ. Parasit. 37(4): 353-378. 1951. [From Auk 69(3).]
"Traces probable evolution of several groups of parasitic nematodes. The suborder Strongylina (= Strongylata), including several groups of bird parasites, is treated in detail, and correlated with vertebrate evolutionary history."

Ferris, G. F. THE SUCKING LICE. Pacific Coast Entomological Society, Memoir 1. ix + 320 p., illus. 1951. $6.00. [From review by "M. T. J." in Annals of the Entomological Society of America 45(2).]
This group of lice contains notable ectoparasites of man and animals. The

INVERTEBRATES--Continued

monograph is thorough in respect to both anatomy and taxonomy and is excellently illustrated.

Fisher, Walter Kenrick. THE SIPUNCULID WORMS OF CALIFORNIA AND BAJA CALIFORNIA. Proceedings of the U. S. National Museum 102(3306): 371-450, illus. 1952.
Taxonomic monograph of this marine group.

Goodey, T. SOIL AND FRESHWATER NEMATODES. Methuen, London; Wiley, N. Y. xxvi + 390 p., illus. 1951. $7.00. [From review by A. L. Taylor in Scientific Monthly 74(3).]
"...a reference work designed to facilitate identification of nematodes found in soil, fresh water, plant material, and similar habitats." Has no key to genera, and most species of a genus are merely listed with their synonyms.

VEGETATION--GENERAL, ECOLOGY, CONTROL, TECHNIQUES

Goodall, D. W. QUANTITATIVE ASPECTS OF PLANT DISTRIBUTION. Biological Reviews 27(2): 194-245. May 1952.
This thorough review, based on more than 200 publications, includes discussions of sampling techniques, aspects of the distribution of a single species, aspects of the distribution of the various species in an area, characteristics of a plant community, and classification of vegetation. It urges wider use of quantitative data in describing vegetation.--N. Hotchkiss.

McCleary, James Albert. SOME FACTORS AFFECTING THE DISTRIBUTION OF MOSSES IN ARIZONA. PhD thesis, University of Michigan, 1952. [Long abstract in Dissertation Abstracts 12(2).]

Senn, Harold A. A BIBLIOGRAPHY OF CANADIAN PLANT GEOGRAPHY IX. 1941-1945, Nos. 4385-5402. Dept. Agr. Div. Bot. Ottawa, Pub. 863: 1-183. Dec. 1951. (Copied from Taxonomic Index for May-June 1952, page 22).

Thomson, George William. MEASURES OF PLANT AGGREGATION BASED ON CONTAGIOUS DISTRIBUTION. University of Michigan, Contributions from the Laboratory of Vertebrate Biology no. 53. 16 p. 1952.

VEGETATION--FLORAS AND COMMUNITIES

Anderson, J. P. FLORA OF ALASKA AND ADJACENT PARTS OF CANADA. AN ILLUSTRATED DESCRIPTIVE TEXT OF ALL VASCULAR PLANTS KNOWN TO OCCUR WITHIN THE REGION COVERED. PART IX. CHICHORIACEAE, ASTERACEAE (COMPOSITAE). Iowa State College Journal of Science 26(3): 387-453, illus. April 1952.

Arnberger, Leslie P. FLOWERS OF THE SOUTHWEST MOUNTAINS. Southwestern Monuments Association, Popular Series No. 7. 112 p., illus. 1952. $1.00.
A companion to Dodge's "Flowers of the Southwest Desert" (see Wildlife Review No. 64, page 40) and Patraw's "Flowers of the Southwest Mesas" (see Wildlife Review No. 65, page 36). It contains large, clear drawings of more than 150 kinds of plants and describes about 30 more. The drawings show variations in size and habit and emphasize the characters that distinguish a particular species. The brief descriptions also emphasize distinguishing characters and include interesting information on uses.--N. Hotchkiss.

Arzeni, Charles Basel. THE PTEROBRYACEAE OF THE SOUTHERN UNITED STATES, MEXICO, CENTRAL AMERICA, AND THE WEST INDIES. PhD thesis, University of Michigan, 1952. [Long abstract in Dissertation Abstracts 12(2).]
Taxonomy and distribution of a group of mosses.

Bard, Gily E. SECONDARY SUCCESSION ON THE PIEDMONT OF NEW JERSEY. Ecological Monographs 22(3): 195-215, illus. July 1952.
From ragweed and goldenrod through aster, bluestem, and red cedar to oak and hickory.--N. Hotchkiss.

VEGETATION--FLORAS AND COMMUNITIES--Continued

Clapham, A. R., R. G. Tutin, and E. F. Warburg. FLORA OF THE BRITISH ISLES. Cambridge University Press, 32 East 57th Street, N. Y. 22, N. Y. 1591 p., illus. 1952. $9.50. [From A.I.B.S. Bulletin 2(3).]
"The Pteridophyta, Gymnospermae and Angiospermae of the region, both native and naturalised, are included; ecological as well as strictly taxonomic information is given for each species. An accompanying volume of illustrations is in preparation." The present volume has 79 text figures.

Crum, Howard Alvin. THE APPALACHIAN-OZARKIAN ELEMENT IN THE MOSS FLORA OF MEXICO WITH A CHECK-LIST OF ALL KNOWN MEXICAN MOSSES. PhD thesis, University of Michigan, 1952. [Long abstract in Dissertation Abstracts 12(2).]

Muenscher, Walter C. L. POISONOUS PLANTS OF THE UNITED STATES. Revised edition. Macmillan, N. Y. xviii + 277 p., illus. 1951.

Roach, Archibald W. PHYTOSOCIOLOGY OF THE NASH CRATER LAVA FLOWS, LINN COUNTY, OREGON. Ecological Monographs 22(3): 169-193, illus. July 1952.
Vine maple, Douglas fir, alpine fir, grand fir, western hemlock, lodgepole pine, Carex, and blueberry are dominant or co-dominant in 6 different communities.--N. Hotchkiss.

VEGETATION--FOREST

Anonymous. COMMON FOREST TREES OF WEST VIRGINIA. Conservation Commission of West Virginia. 1-112 p., illus. 4th edition, 1951.
This 4 x 6-inch paper-bound booklet is a handy, non-technical guide. Each species treatment is illustrated by sketches of diagnostic parts, and notes are given on bark, leaves, fruits, flowers, uses of wood, and distribution in state. Some species are omitted and there is no key.

Anonymous. WHAT YOU SHOULD KNOW ABOUT OAK WILT. National Oak Wilt Research Committee, P. O. Box 373, Memphis, Tenn. Folder. 1952? [From Journal of Forestry 50(7).]
The National Oak Wilt Research Committee is the leading source of information on this serious and widespread disease.

Anonymous. OAK WILT THREATENS NATION'S FORESTS! National Oak Wilt Research Committee, P. O. Box 373, Memphis, Tenn. Folder, illus. 1952? [From Journal of Forestry 50(7).]

Badran, Osman Adly. A DETERMINATION OF THE RELATIONSHIP BETWEEN CERTAIN SOIL MOISTURE CONDITIONS AND THE DEVELOPMENT OF SEEDLINGS OF SOME FOREST TREE SPECIES. PhD thesis, University of Michigan, 1952. [Long abstract in Dissertation Abstracts 12(2).]

Brooks, Maurice G. EFFECT OF BLACK WALNUT TREES AND THEIR PRODUCTS ON OTHER VEGETATION. W. Va. Univ. Agr. Expt. Sta. Bul. 347. 31 p. Oct. 1951. [From Journal of Range Management 5(3).]

Brown, R. T. and J. T. Curtis. THE UPLAND CONIFER-HARDWOOD FORESTS OF NORTHERN WISCONSIN. Ecological Monographs 22(3): 217-234, illus. July 1952.
116 stands were studied in 24 counties. All were part of one community complex. Jack pine and jack oak were pioneers. Less pioneer stands were dominated in turn by red and white pines; white pine, red oak, and red maple; and hemlock, yellow birch, and arborvitae. Climax forest dominants were sugar maple, white elm, basswood, and hophornbeam.--N. Hotchkiss.

Hatheway, William H. COMPOSITION OF CERTAIN NATIVE DRY FORESTS: MOKULEIA, OAHU, T. H. Ecological Monographs 22(2): 153-168, illus. April 1952.

VEGETATION--FOREST--Continued

Hopkins, Walt. WOODS HOGS VS. PINE LOGS. U. S. Forest Service, Southern Forest Experiment Station. 16 unnumbered pages, illus. No date (1952).
A clever, attractive photo-story designed to convince all but the most hardened advocates of the piney woods rooter that the place of the hog is the barnyard. Many photographs and a minimum of text demonstrate that hogs can virtually prevent longleaf pine reforestation, and make semideserts of their range. The roots of longleaf pines, even small ones, have a thick, juicy bark that has as much starch as corn. Young pines are rooted up bodily; the roots of larger ones are exposed and eaten. The whole community suffers financially and in loss of recreation areas. Even the hogs do not prosper as they would if fenced and fed.

Lemmon, Robert S. THE BEST LOVED TREES OF AMERICA. American Garden Guild and Doubleday & Co., Garden City, N. Y. 1-254 p., illus. 1952. $3.50.
An ideal gift for a tree-loving friend. Fifty-nine favorite kinds of trees are discussed in the most popular, interesting fashion and illustrated by beautiful photographs. The photographs occupy more than half the book.

McGuire, John R. and Robert D. Wray. FOREST STATISTICS FOR VERMONT. U. S. Forest Service, Northeastern Forest Experiment Station (Upper Darby, Pa.). viii + 47 p., map. April 1952.
Forest types, ownership, quantities, growth, current drain. Largely tabular.

Metz, Louis J. CALCIUM CONTENT OF HARDWOOD LITTER FOUR TIMES THAT FROM PINE: NITROGEN DOUBLE. U. S. Forest Service, Southeastern Forest Experiment Station, Research Notes no. 14. 2 unnumbered p. July 1952.
Analyses of mineral content of various tree species and various types of forest litter on the Piedmont of South Carolina "...show that shortleaf and loblolly pine contribute less nitrogen, calcium, and magnesium than any of the other common species. Where it is necessary to increase these elements in the surface soil under pure pine stands, the improvement can be accomplished by favoring a hardwood understory..." Data are presented in 2 tables.

Meyer, H. Arthur, Arthur B. Recknagel, and Donald D. Stevenson. FOREST MANAGEMENT. Ronald Press, N. Y. xii + 290 p., illus. 1952. $6.00. [From review by M. E. Deters, Journal of Forestry 50(8).]
"This newly published textbook is designed for use in teaching regulation aspects of forest management at the professional level. It should be of primary interest also to all foresters engaged in the direct management of timberlands. It is excellently written, clear, direct, and easy to understand. The viewpoints and information are current...Organization of the text is pointed toward the preparation of the management plan...the authors contribute much in bringing regulation to a sound, applied basis."

Oosting, H. J. and J. F. Reed. VIRGIN SPRUCE-FIR FOREST IN THE MEDICINE BOW MOUNTAINS, WYOMING. Ecological Monographs 22(2): 69-91, illus. April 1952.
Describes the vegetation and factors affecting it. Special attention is given the autecology of Engelmann spruce and subalpine fir. Information on the subalpine forests of the Rocky Mountains is summarized.

Read, Ralph A. TREE SPECIES OCCURRENCE AS INFLUENCED BY GEOLOGY AND SOIL ON AN OZARK NORTH SLOPE. Ecology 33(2): 239-246, illus. April 1952.

Spurr, Stephen H. FOREST INVENTORY. Ronald Press. xii + 476 p., illus. 1952. $8.50. [From American Scientist 40(2).]
Deals with forest mensuration, estimation of volume, prediction of growth, and sampling problems involved in forest inventory design. "...responds effectively to the major need currently being recognized by those concerned with the utilization of forest resources--the need 'to develop simpler and more accurate methods of correlating forest volume and growth with measurements made on aerial photographs and on the ground.'"

VEGETATION--PASTURE AND RANGE

Allred, B. W. RANGE PRACTICES THAT CAUSE ANIMALS TO GRAZE ALL PARTS OF THE RANGE EQUALLY. Sheep and Goat Raiser 32: 10-12. Dec. 1951. [From Journal of Range Management 5(3).]

Beetle, Alan A. A RELIC AREA ON THE WYOMING SHORTGRASS PLAINS. Journal of Range Management 5(3): 141-143. May 1952.
Notes on species succession and methods of recording data.

Chohlis, G. John. RANGE CONDITIONS IN EASTERN WASHINGTON FIFTY YEARS AGO AND NOW. Journal of Range Management 5(3): 129-134, illus. May 1952.
Two old but authoritative reports demonstrate that range conditions in Eastern Washington 50 years ago were worse than they are now. The improvement is attributed to better private land management as a result of government programs. The author believes that real progress is being made in range management.

Ellison, Lincoln, A. R. Croft, and R. W. Bailey. INDICATORS OF CONDITION AND TREND ON HIGH RANGE-WATERSHEDS OF THE INTERMOUNTAIN REGION. U. S. D. A. Agr. Handbook no. 19. 66 p. Aug. 1951. [From Journal of Range Management 5(2).]

Hughes, H. D., M. E. Heath, and D. S. Metcalfe, editors. FORAGES: THE SCIENCE OF GRASSLAND AGRICULTURE. Iowa State College Press, Ames. xii + 724 p., illus. 1951. $6.75. [From review by H. S. Haskell, Journal of Range Management 5(2).]
Written by 52 specialists. Conditions in the Eastern U. S. receive most attention, with range conditions emphasized in only 2 chapters. The book goes into the soils and economic background of forage production, discusses many plants in detail, and gives a great deal of information on the production, utilization, and storage of forage.

Illige, D. J. RANGE UTILIZATION INVESTIGATIONS. Arizona Game and Fish Commission, Arizona Game Surveys, Project Job Completion Reports, 1951. Project 53 R 1 - WP 4 - J 1. 1-15 p., illus. July 1, 1951.
Results of forage surveys in 4 areas of Northern Arizona and suggestions for improving such surveys. Locations of transects should be randomized if data are to have their greatest value. Comparisons are made between grazed and ungrazed plots.

Malin, James C. MAN, THE STATE OF NATURE, AND CLIMAX: AS ILLUSTRATED BY SOME PROBLEMS OF THE NORTH AMERICAN GRASSLAND. Scientific Monthly 74(1): 29-37, illus. Jan. 1952.
The author questions the accuracy or applicability of various concepts of grassland soils and climax. He appears to reject most accepted views, particularly those of the Russian-American school of pedology. "The calendar of events does not allow the time necessary, 100,000 or even 10,000 years to produce the five inches of topsoil as claimed by conservationists, or to complete succession and climax of vegetation for the areas as a whole. Difference was more characteristic than uniformity. If this interpretation of facts is in error, then the concept of climax must be redefined, especially in its time requirement, both as respects soil maturity (climax) and vegetational climax. Furthermore, in that case, the implication that vegetational succession and climax are dependent upon progressive soil changes in the direction of maturity needs restatement or abandonment."

Moss, E. H. GRASSLAND OF THE PEACE RIVER REGION, WESTERN CANADA. Canadian Journal of Botany 30(1): 98-124, illus. Jan. 1952.
This portion of northwestern Alberta is generally forested, but within the region are parkland areas of natural grassland and poplar and willow groves. The grassland is dominated by Agropyron trachycaulum, Stipa spartea, Koeleria cristata, and Carex.--N. Hotchkiss.

VEGETATION--WET-LAND

Bumsted, A. R. MARSH ECOLOGY. Delaware Game and Fish Commission. 1-6 p. May 1950.
Describes the successional stages of coastal marshes as found in Delaware, with attention to the ecological needs of the more important plants.

Florio, Anthony J. SALT MARSHES: NOTES ON THEIR ORIGIN AND MANAGEMENT. Delaware Game and Fish Commission. 1-10 p. June 1950.
A discussion, based largely on the many references cited, of the origin of coastal marshes, how they can be managed for muskrats and waterfowl by water level control, and how drainage for mosquito control usually ruins the marshes. The author believes, however, that wildlife management can be compatible with mosquito control if a combination of suitable techniques are wisely used.

Penfound, William T. SOUTHERN SWAMPS AND MARSHES. Botanical Review 18(6): 413-446. June 1952.
Describes plant communities and their environment in both fresh-water and salt-water areas in the southeastern states.--N. Hotchkiss.

Scheffer, Theo. H. and Neil Hotchkiss. PLANT-FOOD RESOURCES FOR WATERFOWL IN THE PACIFIC NORTHWEST. Washington Department of Game, Biological Bulletin no. 7: 1-39, illus. 1945.
Discusses the aquatic habitats of the region, the plants and their status in different habits, the limiting factors, and makes general suggestions for improvement of the food supply.

Steeves, Taylor A. WILD RICE--INDIAN FOOD AND A MODERN DELICACY. Economic Botany 6(2): 107-142, illus. April-June 1952.
Discusses taxonomy, range, ecology, life history, natural enemies, food value, aboriginal and present uses, present importance as an Indian crop, present industry, primitive and modern methods of production, and importance as a natural food for waterfowl.--N. Hotchkiss.

Taube, Edward. WILD RICE. Scientific Monthly 73(6): 369-375, illus. Dec. 1951.
A rather full discussion of the importance of wild rice to the Indians and early settlers in Minnesota and Wisconsin. This grain was a major resource and wars were fought over it. Harvesting, processing, and use by Indians are well described. "The once-extensive fields that led men to think this wild grain inexhaustible show only faint signs of their former productivity."

Transeau, Edgar N. THE ZYGNEMATACEAE. Ohio State University Press. xiv + 327 p., illus. 1951. $6.00. [From review by K. F. Mather in American Scientist 40(3).]
Monographic study and manual for identification of this group of fresh-water conjugate algae.

Wood, R. D. THE CHARACEAE, 1951. Botanical Review 18(5): 317-353. May 1952.
Ecology, economics (including relations with waterfowl), list of 292 species in 7 genera, and more than 300 references.--N. Hotchkiss.

LAND, SOILS, WATER, AND CLIMATE

Buckhannan, W. H., and others. SOIL SURVEY OF OKFUSKEE COUNTY, OKLAHOMA. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering, Series 1940, no. 7: 1-110, illus. April 1952. $1.25.
The text gives much information on the area and its agriculture as well as on the soils. The map is on a scale of 1:48,000 and includes cultural features.

LAND, SOILS, WATER, AND CLIMATE—Continued

Castro, Josué de. THE GEOGRAPHY OF HUNGER. Little, Brown and Co., Boston. 377 p. 1952. $4.50. [From review by Tom Gill in Journal of Forestry 50(6).]
This book, intended as a rebuttal of such works as Vogt's "Road to Survival" and Osborn's "Our Plundered Planet," propounds the thesis that human overpopulation is the result of malnutrition, and that proper world nutrition would reduce populations through high protein consumption. The author assumes that 16 billion acres rather than the present 2½ billion acres can be put into cultivation, an assumption no expert can support. Soil erosion the author considers of minor significance. "By every objective standpoint, The Geography of Hunger is a very poor book, and there would be little point in devoting time or space to a review of its bizarre doctrine were it not that the author holds an important chairmanship in the United Nations Food and Agriculture Organization, and because his book is a current selection of the Book Find Club. ...this does not prevent such literary malpractice as The Geography of Hunger from doing ponderable harm to the efforts that responsible scientists and land managers are making to banish substandard living from the earth."

Davis, D. E., F. L. Woodward, H. A. Svenson, A. D. Stoesz, D. H. Wallace, and J. W. Kimball. SYMPOSIUM ON THE APPLICATION OF ECOLOGY TO WATER CONSERVATION. Scientific Monthly 73(6): 343-355, illus. Dec. 1951.
Papers in this symposium are: Introduction (Davis); Applied ecology in public health (Woodward); Forestry and applied ecology (Svensen); Water conservation and grassland (Stoesz); Ecology, water conservation, and the shellfisheries (Wallace); Game conservation and ecology (Kimball). Kimball's paper deals with the relationship between biologist and administrator in waterfowl work.

Hatt, Paul K., editor. WORLD POPULATION AND FUTURE RESOURCES. American Book Co. xviii + 262 p., illus. 1952. $3.50. [From American Scientist 40(2).]
Reports by many specialists on "...the relation of the potential growth of world population to the resources available for human sustenance."

Ludwig, H. F., W. J. Oswald, J. L. Mohr, C. L. Newcombe, R. M. Paul, and H. K. Phinney. SYMPOSIUM ON THE ROLE OF ECOLOGY IN WATER POLLUTION CONTROL. Scientific Monthly 74(1): 3-20, illus. Jan. 1952.
Papers in this symposium are: Role of algae in sewage oxidation ponds (Ludwig and Oswald); Protozoa as indicators of pollution (Mohr); Water pollution in the California and Great Basin area (Newcombe); Water pollution and fish populations in Pacific Coast streams (Paul); Phytoplankton and pollution (Phinney).

Maas, Arthur. MUDDY WATERS. Harvard University Press. xiv + 306 p., maps. 1951. $4.75. [From review by K. F. Mather in American Scientist 40(3).]
"This abundantly documented study of 'the Army Engineers and the Nation's Rivers' presents a careful evaluation of the efforts that have been made by the Corps of Engineers to develop the rivers of the United States for navigation, flood control, and other allied purposes. It deals at least as much with economics and politics as with the engineering aspects of the problems encountered... Unlike much of what has been said or written in the last few years about the civil activities of the Army Engineers, the criticisms and the praise contained herein are supported fully by citations from the record. The net result is by no means to the unalloyed credit of the Congress and the Corps, and it is abundantly evident that basic changes, such as those suggested, must be made for the benefit of all concerned."

Stamp, L. Dudley. LAND FOR TOMORROW. Indiana University Press. 230 p., illus. 1952. $4.00. [From A.I.B.S. Bulletin 2(3). See also review by E. H. Graham in Soil Conservation 18(2).]
"The contents of this small but provocative book include 'Food for All,' 'Salvaging the Old World' and 'Preserving the New World.' The thesis is advanced that the most important [underdeveloped] lands are not in the tropics

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but in the middle latitudes of the U. S., the Soviet Union, Canada, Australia and Argentina." The author is a distinguished English authority on land use.

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